

CITY OF AVENAL

1992 GENERAL PLAN

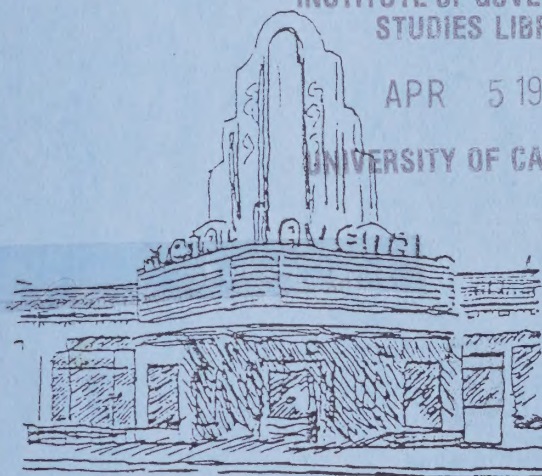
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DRAFT ENVIRONMENTAL IMPACT REPORT

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SECTION 1


AVENAL
GENERAL
PLAN



SECTION 1 AVENAL GENERAL PLAN

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CHAPTER

1

INTRODUCTION





CHAPTER 1 • INTRODUCTION

AVENAL

Avenal is located in western Kings County in the southern portion of the San Joaquin Valley. The urbanized portion of Avenal is located around the intersection of State Highways 33 and 269. It is 18 miles southeast of the City of Coalinga and 40 miles southwest of Hanford, the county seat (see Exhibit No. 1)

THE AVENAL GENERAL PLAN

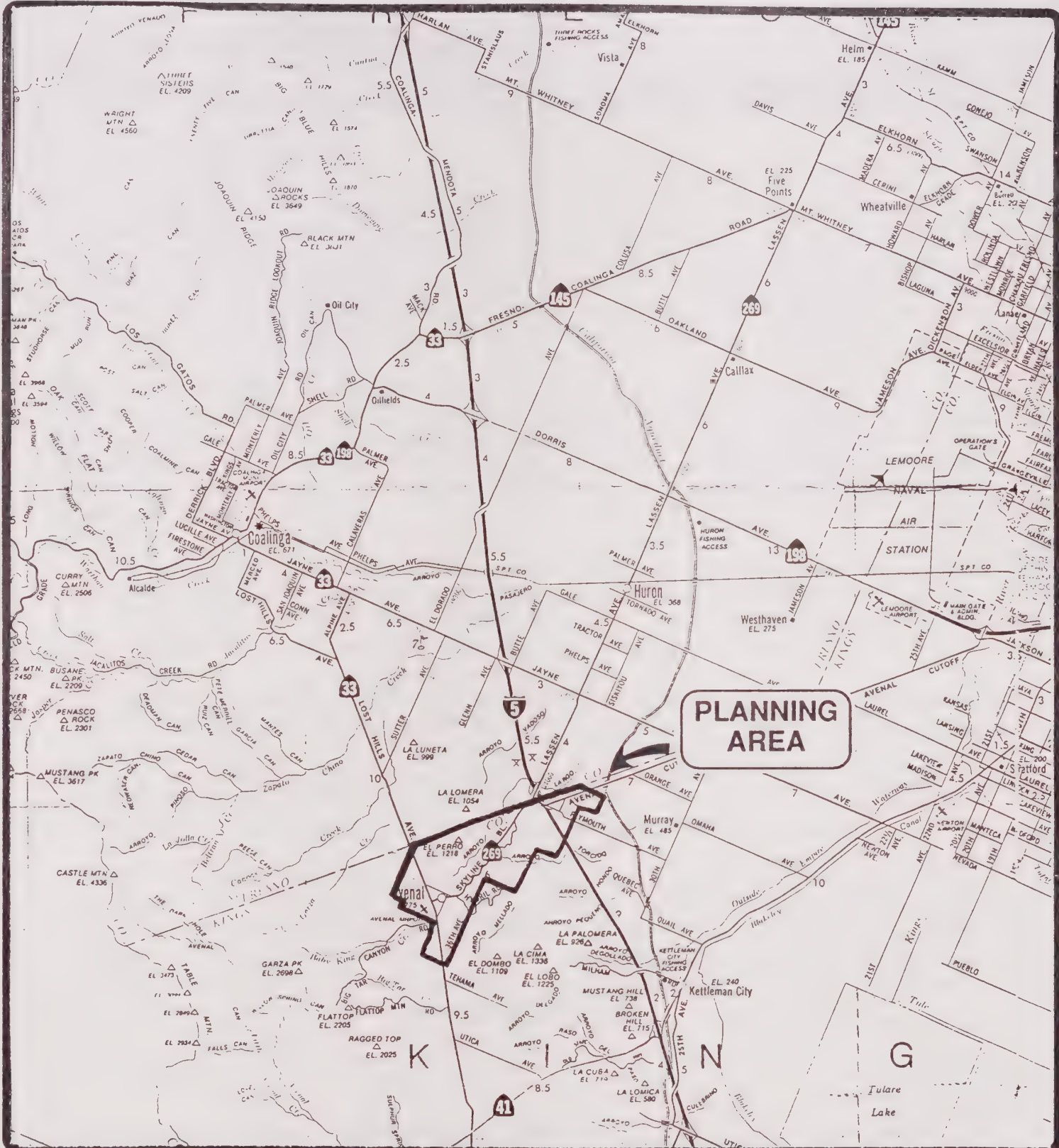
Avenal's vision and expectations for the "future" are expressed in its General Plan. This document is a "blueprint" for the year 2010, which contains goals, policies and action programs. Avenal's success in fulfilling its vision and expectations will depend on how well the "blueprint" is followed.

Having incorporated only in 1979, Avenal is young relative to other cities in the region. As Avenal matures, the General Plan will serve as the guide for future decisions. The General Plan has three fundamental purposes:

- Guide the Planning Commission and City Council in regards to land use, circulation, housing and capital improvement decisions.
- Provide for the public, both in written word and in map, where Avenal is headed in terms of development and management of its resources.
- Provide for the private sector a document upon which it can base investment decisions.

State planning law requires all local jurisdictions to adopt and maintain a General Plan incorporating seven required elements. The law also requires that these general plan elements be consistent with each other. For example, the Avenal Housing Element may include a policy that states that the city provide adequate sites for a range of housing types, including multi-family residential uses. The Land Use Element would have to be consistent with this policy by designating sufficient land area for this type of development.

Another example of inter-element consistency involves the use of population projections, which is the basis for future land needs for housing units and other urban uses. The Land Use and Housing Elements should use the same population projections in their needs analysis to avoid inter-element inconsistencies.



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REGIONAL LOCATION

EXHIBIT NO. 1



THE GENERAL PLAN

In an effort to insure that land and resources within the State of California are properly managed and developed and that the health, safety and welfare of its citizens are protected, each California city is required to prepare a long-term, comprehensive planning document, which details how the city will physically develop. This document - the General Plan - contains seven mandated elements - land use, circulation, housing, open space, conservation, safety and noise.

Planners and decision-makers have likened the General Plan to the U.S. Constitution in that decisions regarding land use, circulation, housing and capital improvements must be consistent with the goals, objectives and policies of this document. In *City of Santa Ana v. City of Garden Grove*, 100 Cal. App. 3d 521, 532 (1979), the court of appeal, in explaining California's general plan legislation in 1971, stated it has:

"... transformed the general plan from just an 'interesting study' to the basic land use charter governing the direction of future land use in the local jurisdiction As a result, general plans now embody fundamental land use decisions that guide the future growth and development of cities."

City decisions that are not consistent with the General Plan place that jurisdiction in a legally tenuous position and subject to legal challenge. In *Friends of "B" Street . et. al. v. City of Hayward, et. al.*, 106 Cal. App. 3d 988 (1980), the court concluded that construction of public improvements (e.g. street projects, sewer lines, etc.) must be consistent with the general plan. Further, the court stated that the general plan essentially is the constitution for all future development within the city.

A General Plan that is legally inadequate - internally inconsistent, lacking one or more mandatory elements, or an element lacking required information - can prevent a city from issuing land use approvals, including building permits, zone changes, and subdivisions. *Sierra Club v. Kern County*, 126 Cal. App. 3d 698, 704 (1981); *Resource Defense Fund v. County of Santa Cruz*, 133 Cal. App. 3d 800, 803 (1982); *Camp v. Mendocino*, 123 Cal. App. 3d 334 (1981).

AUTHORITY

Under state planning law (Government Code Section 65300 et seq.), each city must adopt a comprehensive, long-term general plan for the physical development of the city and any land outside its city limits which, in its judgment, bears relation to its planning. The general plan shall be comprised of text and a map and shall be readily available to the public for examination.



THE AVENAL PLANNING AREA

The planning area includes lands within Avenal's city limits and sphere of influence. The city limits contains 19.5 square miles of which, 2.5 square miles is urbanized. The sphere of influence, which is almost co-terminus with the city limits, contains about 20.5 square miles (see Exhibit No. 2).

Almost one-half of the planning area is located in the Kettleman Hills. This area is unsuitable for development because of steep slopes and unstable soils, a lack of services and infrastructure, the existence of rare and endangered plant and animal species, hazardous seismic conditions, the land being owned by the federal government, and/or the land being under the Williamson Act contract. Another constraint to development in this area involves the extensive ownership of land by the oil companies, approximately five square miles. An extensive system of roads pipelines, wells and buildings have been constructed on these lands. Dismantling this system for the purpose of developing the property would be cost-prohibitive and environmentally, ill-advisable.

About 40 percent of the planning area is located on the Kettleman Plain, west of Kettleman Hills. This portion of the planning area contains the urbanized area of the City of Avenal and the Avenal State Prison.

The remaining portion of the planning area is located in the San Joaquin Valley, east of the Kettleman Hills. It is traversed by Interstate 5 and the California Aqueduct.

PLANNING PERIOD

The General Plan will guide development in Avenal to the year 2010. Every five years, the General Plan should be reviewed and updated to insure that it is reflective of the changes in community attitudes and market forces.

State planning law permits the mandatory elements of the General Plan to be amended as often as four times per year. This provision in State law allows the city to "fine-tune" its General Plan; however, since the General Plan is a "public" document, any amendment should have the broad support of the public.

CITY OF AVENAL

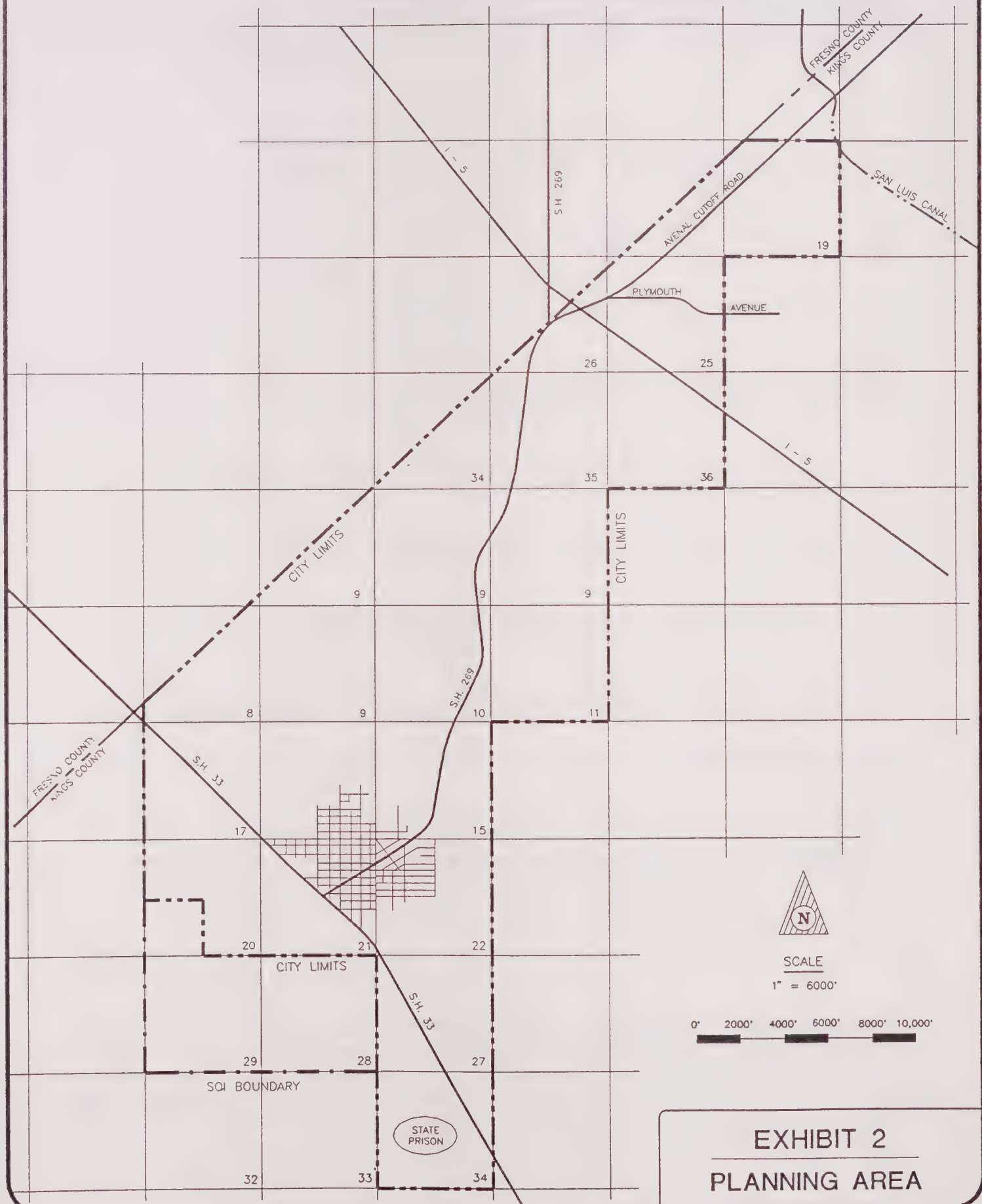


EXHIBIT 2
PLANNING AREA



GENERAL PLAN OBJECTIVES

The objectives of the Avenal General Plan are as follows:

- Recognize the changing conditions and trends in the planning area and make appropriate amendments to the General Plan.
- Project the future growth of the community and make provisions for this growth in the General Plan.
- Provide for a greater variety and locational choices for housing, commercial and industrial developments.
- Achieve a balanced and efficient land use pattern by basing proposed land use configurations on the development potential of sites and on the prevention of land use conflicts.
- Provide for adequate public facilities at appropriate locations to meet the needs of the projected population.
- Provide a desirable land use framework upon which infrastructure planning is based.
- Promote economic development in the community by designating specific sites for industrial parks and shopping centers.
- Recognize all the past land use approval actions and adopted land use policies and integrate them into the General Plan.
- Make the necessary changes in the General Plan to make it consistent with the City's Zoning Ordinance.
- Provide a safe and pleasant environment and enhance property values throughout the community by avoiding and eliminating land use conflicts.
- Enhance the viability of Avenal's downtown - Kings Street district.

DOCUMENT ORGANIZATION

The Avenal General Plan and accompanying Environmental Impact Report are contained in three distinct sections of this document. Section No. 1 contains six of the seven state-mandated elements of the general plan; the housing element is being prepared by Kings County. These elements are: land use, circulation, noise, safety, and two elements that have been combined, the open space/conservation



element. Each element is generally formatted as follows:

- I. INTRODUCTION
- II. GOALS
- III. THE PLAN
 - A. ISSUE
 - B. POLICY
 - C. ACTION PROGRAM
- IV. CONCLUSION

Section No. 2 contains background information on the City of Avenal. It is support information for the six general plan elements found in Section No. 1 and serves as the environmental setting for the environmental impact report contained in Section No. 3. Section No. 2 is formatted as follows:

- I. HUMAN ENVIRONMENT
 - A. POPULATION
 - B. SOCIO-ECONOMIC CONDITIONS
 - C. HOUSING CHARACTERISTICS
 - D. SERVICES
 - E. LAND USE
 - F. INFRASTRUCTURE
- II. PHYSICAL ENVIRONMENT
 - A. CLIMATE
 - B. TOPOGRAPHY
 - C. SOILS
 - D. GEOLOGY
- III. RESOURCES
 - A. SCENIC
 - B. AGRICULTURE
 - C. CULTURAL
 - D. BIOTIC
 - E. AIR QUALITY
 - F. WATER QUALITY
- IV. RISK OF UPSET
 - A. FLOODING
 - B. NOISE
 - C. SEISMIC

Section No. 3 of this document contains the environmental impact report prepared for the Avenal General Plan. This section of the document discusses the



environmental impacts associated with the implementation of the general plan. In addition, it lists mitigation measures and discusses alternatives to the general plan that can reduce the general plan's impact on the environment. Section No. 3 is formatted as follows:

- I. EXECUTIVE SUMMARY
- II. INTRODUCTION
- III. PROJECT DESCRIPTION
- IV. ENVIRONMENTAL SETTING (see Section No. 2)
- V. ENVIRONMENTAL IMPACT ANALYSIS
- VI. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS
- VII. ALTERNATIVES TO THE PROPOSED ACTION
- VIII. LONG-TERM IMPLICATIONS OF THE PROPOSED PROJECT
- IX. EFFECTS FOUND NOT TO BE SIGNIFICANT
- X. PERSONS AND AGENCIES CONSULTED

CHAPTER

2

LAND USE ELEMENT





CHAPTER 2 • LAND USE

INTRODUCTION

The Land Use Element is the most prominent of the seven mandatory elements of the General Plan. It, more so than the other elements, has the most significant impact on existing and future Avenal residents. It is the element that determines the distribution and general location of housing, commercial and industrial uses, public facilities, landfill sites, and open space uses. The Land Use Element must also disclose building intensities and population densities for land uses within the planning area.

LAND USE ELEMENT ORGANIZATION

The Avenal Land Use Element contains six primary components:

- 1) existing conditions and projections;
- 2) description of each land use designation;
- 3) land use acreages and a map illustrating the general location and distribution of land uses within the planning area;
- 4) community goals;
- 5) issues, policies and action programs; and
- 6) a land use designation/ zoning district matrix.

EXISTING CONDITIONS AND PROJECTIONS

Information on existing conditions in Avenal is contained in Section No. 2 of this document. Included in this section is information on the human and physical environments, natural resources and areas that are at risk of upset.

CHAPTER

2

LAND USE ELEMENT

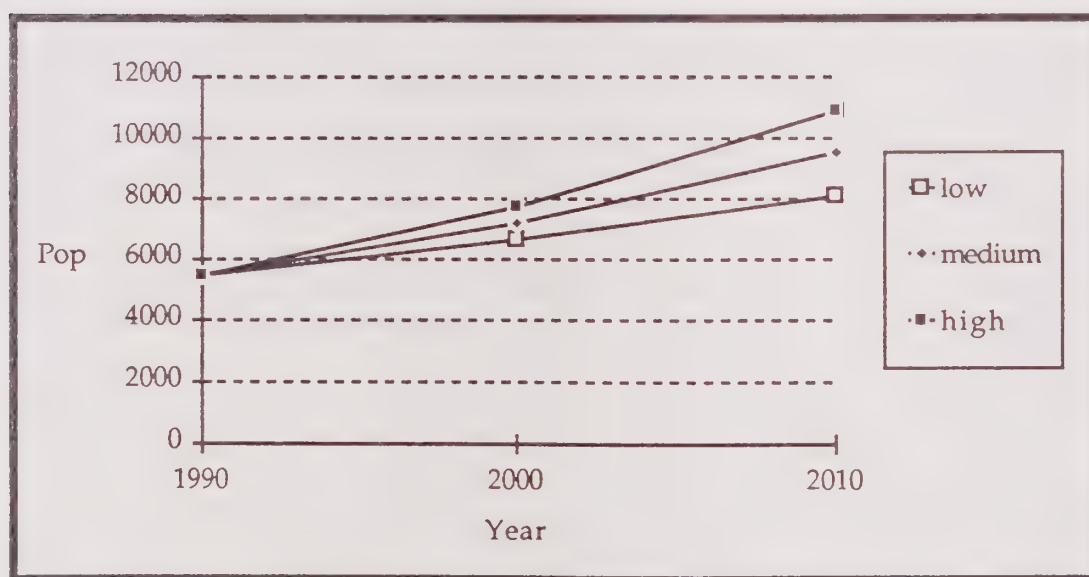




Population Projections

In order to determine the type, location and amount of residential land that will be required by Avenal within the 18-year planning period, projections involving population, housing units and land use acreages are required. Three non-prison population projections - low, medium and high - for the year 2010 are displayed below in Figure No. 1. Under each population projection scenario, the following number of people would be added to the community, low projection, 2651 persons; medium projection, 4022 persons; and high projection, 5399 persons. The low projection is based on the growth rate from 1970 to 1990, 2.0 percent; the medium projection on the growth rate from 1980 to 1990, 2.8 percent; and the high projection on the growth rate from 1990 to 1991, 3.5 percent.

Figure No. 1
Population Projections



Source: U.S. Census 1970, 1980, and 1990; State Department of Finance

Residential Land Demand

To determine the amount of residential land Avenal will require within the planning period, the following calculations are provided for each population projection scenario. The Consultant has based the calculations below on a number of assumptions, which are as follows:



- The number of persons per residential unit will be 3.10 persons (1990 Census).
- Seventy-one percent of the new residential units will be single family dwellings, 27 percent multi-family units, and 2 percent mobile home parks. (State Department of Finance, 1990)
- Single family developments will have a gross density of 4 units per acre; multi-family development, 15 units per acre; and mobile home parks, 8 units per acre.
- The residential land demand for 2010 shall be increased by a factor of two so as to insure that the residential real estate market does not become overly restricted thus forcing up land prices.

Residential Land Demand - Low Estimate

8106 (2010 estimated population) - 5455 (1990 population) =	2651 persons
2651 persons / 3.10 persons per residential unit =	855 residential units
855 residential units x 71 percent single family units =	607 units
855 residential units x 27 percent multi- family units =	231 units
855 residential units x 2 percent mobile home units =	17 units
607 single family residential units / 4 units per acre =	152.0 acres
231 multi-family residential units / 15 units per acre =	15.4 acres
17 mobile home units / 8 units per acre =	<u>2.2 acres</u>
	169.6 acres
169.6 acres x 2 (flex-factor)	339.2 acres

Residential Land Demand - Medium Estimate

9477 (2010 estimated population) - 5455 (1990 population) =	4022 persons
4022 persons / 3.10 persons per residential unit =	1297 residential units
1297 residential units x 71 percent single family units =	921 units
1297 residential units x 27 percent multi- family units =	350 units
1297 residential units x 2 percent mobile home units =	26 units
921 single family residential units / 4 units per acre =	230.0 acres
350 multi-family residential units / 15 units per acre =	23.35 acres
26 mobile home units / 8 units per acre =	<u>3.24 acres</u>
	256.59 acres
256.59 acres x 2 (flex-factor)	513.18 acres



Residential Land Demand - High Estimate

10854 (2010 estimated population) - 5455 (1990 population) =	5399 persons
5399 persons / 3.10 persons per residential unit =	1742 residential units
1742 residential units x 71 percent single family units =	1237 units
1742 residential units x 27 percent multi- family units =	470 units
1742 residential units x 2 percent mobile home units =	35 units
1237 single family residential units / 4 units per acre =	309.0 acres
470 multi-family residential units / 15 units per acre =	31.36 acres
35 mobile home units / 8 units per acre =	<u>4.35 acres</u>
	344.71 acres
344.71 acres x 2 (flex-factor)	689.43 acres

These residential land demand estimates indicate that Avenal will need between 169 and 344 acres of additional land for residential development by 2010. To insure that the real estate market is not too restrictive, the Land Use Element will provide for twice the amount of the high land demand acreage figure.

LAND USE DESIGNATIONS

The land use designations contained on the Avenal Land Use/Circulation Element map are described below (see Exhibit No. 3). In addition, a maximum population density and generalized location criteria is provided for each designation.

Residential

low density - a maximum of two dwelling units per gross acre, or 10 persons per acre. Development in this category may not be required to install sidewalks and street lighting or connect to the city's sewage collection system. This designation shall be reserved for those lands that contain slopes that range from 5-15 percent, north and east of the City.

medium density - a range of 3 to 14 dwelling units per gross acre, or 56 persons per acre. Development in this category will encompass single-family residential subdivisions, duplex units and mobile home parks. This designation shall be reserved for land north and south of Skyline Boulevard and west of State Highway 33.



high density - a range of 15 to 29 dwelling units per gross acre, or 87 persons per acre. Development in this category will include apartments, condominiums, senior housing complexes and mobile home parks. This designation shall be reserved for lands that are located on collector or arterial roadways. The maximum number of units that will be permitted without a conditional use permit shall be 20 units.

Commercial

downtown - commercial shall be reserved for the downtown area of Avenal, which generally includes properties on both sides of Kings Street between State Highway 33 and Skyline Boulevard. This district shall be reserved for offices; high density residential projects, financial institutions, restaurants, theaters, retail uses, and governmental offices.

This district will have the following distinguishing features - the buildings will be set directly behind the sidewalk, the sidewalks will be wide, parking shall be on-street or off the alleys, and the district will contain unique street lighting, street furniture with landscaping, and restored building facades. Projects within this district shall undergo design review.

community - commercial shall be reserved for properties generally on both sides of Skyline Boulevard from State Highway 33 to Hydril Road. This district shall be reserved for shopping centers, neighborhood and community retail uses, offices, and commercial services.

This district will have the following distinguishing features - the buildings have landscaping in the front, parking shall be off-street, signs shall be regulated and new uses shall undergo site plan review by the City.

service - commercial shall be reserved for properties east of State Highway 33 and south of Ventura and Orange streets and for property located generally east of Seventh Avenue and south of Kern Street. These areas shall be reserved for uses that include a mix of light industrial and heavy commercial uses. Generally, these types of uses are not well suited for other parts of the community because of their appearance or their tendency to generate noise and glare.

This district will have the following distinguishing features - the buildings have landscaping in the front, parking shall be off-street, all visible equipment and storage areas shall be fenced and screened from public view, lighting shall not be allowed to illuminate surrounding properties, signs shall be regulated and new uses shall undergo site plan review.

highway - shall be reserved for three areas in the community. Area one is located at the northwest corner of San Joaquin Street and E Avenue; area two is located at the



northwest corner of State Highway 33 and Seventh Avenue; and area three is located at the intersection of Interstate 5 and State Highway 269. These areas shall be reserved for commercial uses that service the traveling public. These uses usually require extensive amounts of parking and must be visible from the adjacent roadways.

This district will have the following distinguishing features - the subject site will have extensive landscaping, parking shall be off-street and landscaped, signs shall be regulated but shall be visible from the adjacent roadways, and new uses shall undergo site plan review.

Industry

Avenal shall have two areas designated for industrial development. Area one is located near the intersection of the Avenal Cutoff Road and Interstate 5. This area can take advantage of its access to Interstate 5 and its central location relative to northern and southern California. Further, the PG & E facility, located near this intersection, could provide an industry with the opportunity to use natural gas, which is compressed at this facility.

Area two is located south of Avenal and east of State Highway 33. It includes Avenal's old sewage treatment plant and the treatment plant that was constructed during the construction of the State Prison. This area is located downwind from the community, has access to State Highway 33 and is uphill from the wastewater treatment plant.

This district will have the following distinguishing features - the subject site will have extensive landscaping, parking shall be off-street and landscaped, storage areas shall be fenced and screened, signs shall be regulated and new uses shall undergo site plan review.

Public Facilities

This designation is reserved for facilities that are frequented by the public, including schools, the post office, city hall, the Avenal District Hospital and county offices.

This district will have the following distinguishing features - the subject site will have extensive landscaping, parking shall be off-street and landscaped, signs shall be regulated and new uses shall undergo site plan review. Schools will receive special attention in regards to pedestrian, bike and bus circulation.



Open Space

This designation is applied to lands that will remain generally free of buildings. Uses that would receive this designation would include parks, water courses, environmentally sensitive lands, and scenic corridors.

Agriculture

This designation is applied to lands that are being, or have the capacity to be, actively farmed or utilized for grazing purposes. The intensively farmed lands are located on the San Joaquin Valley floor or the Kettleman Plain.

The lands that are considered extensive agriculture support grazing lands and are located in the Kettleman Hills. This designation also allows for the exploration, transmission and storage of oil and gas.

The supporting zone districts for these land use designations will have a minimum parcel size of 40 acres for intensive agriculture and 160 acres for extensive agriculture.

LAND USE ACREAGES

Acreages for each of the land use designations displayed on the Avenal Land Use/Circulation map are listed in Table No. 1. These acreage figures reflect the demand for each land use type over the 18-year planning period. Some of the land use designations, however, have acreages that exceed their potential demand. In the case of the residential and industrial designations, more land was allocated for development than will be needed by 2010 in an effort to insure that the real estate market for these types of land was not overly restricted.



Table No. 1
Land Use Designation Acreages

Land Use Designation	2010 Acreages
RESIDENTIAL	
low density residential	346
medium density residential	555
high density residential	61
residential "reserve"	155
COMMERCIAL	
downtown	10
community	50
service	8
highway	82
INDUSTRY	
Industry	200
Industrial "reserve"	334
PUBLIC FACILITIES	
waste water treatment plant	22
airport	83
schools	129
landfill	160
Avenal State Prison	626
OPEN SPACE	
parks	29
nature preserve	302
AGRICULTURE	8692
TOTAL	11844

Source: Collins & Associates, 1992



COMMUNITY GOALS

Land use goals express general community values. They are a vision for the future, which can refer to image and appearance, economic viability, health and safety, preservation of resources, and fiscal soundness. Land use goals for Avenal are as follows:

1. ENHANCE THE IDENTITY AND IMAGE OF AVENAL
2. PROTECT THE HEALTH, SAFETY AND WELFARE OF AVENAL RESIDENTS
3. EXPAND AND DIVERSIFY EMPLOYMENT IN AVENAL
4. PROTECT MINERAL RESOURCES IN AVENAL
5. PROTECT NATURAL RESOURCES IN AVENAL, INCLUDING PRIME AGRICULTURAL LAND, BIOTIC AND CULTURAL RESOURCES, AND WATER QUALITY.
6. INCREASE RETAIL SHOPPING AND COMMERCIAL SERVICE OPPORTUNITIES IN AVENAL
7. PROVIDE A PUBLIC SERVICE SYSTEM THAT IS EFFICIENT AND ENHANCES THE 'QUALITY OF LIFE' IN AVENAL
8. PROVIDE AN INFRASTRUCTURE SYSTEM THAT IS EFFECTIVE AND COST-EFFICIENT IN TERMS OF SERVICING URBAN DEVELOPMENT
9. PROMOTE URBAN GROWTH PATTERNS AND LAND USE ARRANGEMENTS IN AVENAL THAT MINIMIZE LAND USE CONFLICTS
10. ENHANCE THE SCENIC QUALITY OF AVENAL
11. STRUCTURE AN ACTION PROGRAM THAT EFFECTIVELY AND FINANCIALLY IMPLEMENTS THE OBJECTIVES AND POLICIES OF THE LAND USE ELEMENT.
12. PROTECT AND ENHANCE AVENAL'S RESIDENTIAL NEIGHBORHOODS
13. IMPROVE THE LONG -TERM FISCAL CONDITION OF AVENAL
14. ENHANCE THE VIABILITY OF THE DOWNTOWN



THE PLAN

The Plan is divided into three parts. The first part is the identification and discussion of general community issues, such as industrial development or neighborhood conservation.

The second part of the Plan is to identify policies that will guide future decisions regarding community issues. For example, under industrial development, a policy associated with this issue might read: *Insure that the Avenal wastewater treatment plant has adequate capacity to serve future industrial uses.*

The third part of the Plan is the action program. The programs will serve to identifying the action that is required to implement the policy.



COMMUNITY IMAGE

Issue

Most cities do not realize the importance of image. To quote the famous tennis star Andre Agassi, "*Image is everything.*" While most people would agree that image is not everything, it does play a role in the success of a community.

Investors, the traveling public, homebuyers, and industrial site locators, take into consideration "image" when they make "the decision" to invest or not to invest in the community. Is it clean? Is it attractive? Is there a sense of community? Is there a pride of ownership? The answers to these questions and others determine if "the decision" is yes or no.

Avenal has made great strides toward improving its image - curbs, gutters and sidewalks throughout the community, landscaping along Skyline Boulevard, a new entryway sign. Continued focus on this aspect of city management will pay long-term dividends to the community in the form of private investment, appreciating land values, and improved maintenance of property.

Policies and Action Programs

1. Continue to upgrade Skyline Boulevard and Kings Street with public improvements, such as landscaped medians and improved signage in order to enhance Avenal's visual image, attract shoppers, and entice private investment.

Action - The Redevelopment Agency shall facilitate the preparation of a landscaping and signage plan for the center median of Skyline Blvd. and a streetscape plan for Kings Street, including landscaping, lighting, and street furniture. Funding will come from the Agency and property-owners along these two thoroughfares.

2. Improve the visual appearance of lands along State Highway 33 by upgrading and/or removing vacant buildings, by planting trees within the highway right-of-way, and by closing some of the local streets that intersect with the highway.

Action - The Planning and Engineering Departments will conduct a specific analysis of State Highway 33 from San Joaquin Street to Seventh Avenue to determine which streets can be closed, which land uses can be upgraded and/or removed, and where landscaping can be planted. Funding will come from the general, transportation and gas tax funds.

3. Develop a landscaped median program for San Joaquin Street and that portion of Seventh Avenue, which connects San Joaquin with Skyline Boulevard.



Action - The Engineering Department will prepare a landscaping plan for these roadways while insuring that left-hand turn lanes are provided. Funding will come from the general, transportation and gas tax funds.

4. Design and install "custom" City of Avenal signs at the major entrances to the city.

Action - A citizens committee will design and install the City of Avenal signs. Funding will come from the general fund.

5. Conserve as open space the "scenic corridor" along State Highway 269, which extends from the top of Kettleman Hills into Avenal and has an approximate width of 500 feet.

Action - Adoption of the Land Use Element will implement this policy.

6. Upgrade development standards, which involve signs, landscaping, and parking lot design, for new multi-family residential, commercial and industrial development.

Action - Adoption of the revised Avenal Zoning Ordinance will implement this policy.

7. Underground the utility poles along San Joaquin Street through the formation of an Undergrounding District.

Action - The Engineering Department will contact the local utility companies to determine the process and time schedule for forming an Undergrounding District.

8. Facilitate the construction of a planned residential development in the northern part of Avenal at the base of the Kettleman Hills that will include the following: large-lot residential development, golf course, and landscaped roadway with a bikepath.

Action - Adoption of the Land Use Element and a subsequent specific plan will implement this policy.

?



GROWTH MANAGEMENT

Issues

The management of urbanization - rate, direction, density, and composition - has an impact on a city's service delivery system, visual appearance, the public's health and safety, and the fiscal condition of the city.

Avenal has a considerable number of vacant residential lots, which are within the service area of Avenal's service delivery system. The development of these lots will have less of a fiscal impact on the city than newly formed lots on the periphery of the City.

Avenal has a number of vacant commercial buildings and lots along Skyline Blvd. and Kings Street. This condition casts a negative image on the City and undermines Avenal's opportunity to generate additional sales tax and tax increment.

Development on the west side of State Highway 33 would place urban growth in conflict with the airport and agricultural operations. In addition, development on the west side of the highway would create a situation whereby Avenal would be divided by an at-grade State highway, which potentially creates traffic safety, service delivery and circulation problems for the City. Also, the west side of Highway 33 is subject to flooding.

Future urban growth should avoid environmentally sensitive lands - steep slopes, floodplains, wildlands - in order to protect the public's health, safety and welfare and conserve the area's natural resources.

Currently, the north side and the south side of Avenal are out of balance in terms of public facilities. All the schools and parks are located on the north side of Avenal while few public buildings or grounds exist on the south side of Avenal. Future land use decisions should attempt to correct this imbalance.

Policies and Action Programs

1. Maintain Avenal as a growing community that will focus on urban infill and upgrading of its existing urbanized lands.

Action - Adoption of the Land Use Element will implement this policy by precluding urban sprawl and maintaining some lands in a "reserve" status until in-fill is achieved.



2. Properties that have a "reserve" status shall maintain that designation until 80 percent of the land in that land use category has been developed.

Action - Adoption of the Land Use Element will implement this policy.

3. Insure that sufficient amounts of land are designated for residential, commercial and industrial growth so that real estate values do not become overly restricted.

Action - Adoption of the Land Use Element will implement this policy.

4. Preclude urban growth on the west side of State Highway 33 in order to avoid land use conflicts with the airport, placing urban development in an area subject to flooding, and creating a future community that is bisected by an at-grade State highway.

Action - Adoption of the Land Use Element will implement this policy.

5. Discourage residential development that is not contiguous to existing development.

Action - Through an ordinance, require non-contiguous residential development to pay for the oversizing of sewer and water lines.

6. Discourage residential development on lands that are environmentally sensitive, such as flood plains, steep slopes or high fire hazard areas.

Action - Adoption of the Land Use and Safety Elements will implement this policy.

7. Insure that development activity, public improvements and investment, and the the service delivery system are evenly balanced between the two parts of Avenal - north and south of Skyline Boulevard.

Action - Adoption of the Land Use Element will implement this policy as will funding of a new school site and park on the south side of Avenal.



RESIDENTIAL NEIGHBORHOODS

Issues

A neighborhood is to a city what family is to society. Without stable neighborhoods, which are well-maintained, appreciating in value, safe, and properly served with infrastructure and services, the likelihood of a community being successful is remote. Conservation of the neighborhood should be a number one priority of the planning commission and city council.

Policies and Action Programs

1. Provide for adequate land area designated for residential uses so that the real estate market does not become overly restrictive thereby causing land values to increase.

Action - Adoption of the Land Use Element will implement this policy by designating twice as much land as is actually needed for residential and industrial development for 2010.

2. Encourage residential "infill" prior to developing lands on the perimeter of the community, which can be more costly in terms of services and infrastructure. Infill should be encouraged through the following management criteria.

- a. Fifty percent of new residential development should come from residential infill during any one year.
- b. The Avenal Redevelopment Agency should facilitate development of vacant residential lots through the use of its housing "set aside" funds.
- c. Self-Help Enterprises and other housing organizations should be contacted to determine their interest in building residential dwelling on vacant lots in the community.

Action - Adoption of the Land Use Element will implement this policy and development criteria.

3. Develop design measures that help to buffer residential development from non-residential uses, including separating the different uses with a roadway, increasing setback distances or installing walls and landscaping.



Action - Adoption of the revised Zoning Ordinance and the City's site plan review process will implement this policy.

4. Discourage the fronting of single family dwellings onto collector or arterial roadways.

Action - Adoption of the Land Use and Circulation Elements will implement this policy. Through the City's subdivision review process, single family lots will be precluded from having direct access onto these types of roadways.

5. Preclude the intrusion of non-residential uses into older, established residential neighborhood.

Action - Adoption of the Land Use Element and proper zoning for each residential neighborhood will implement this policy.

6. Upgrade existing neighborhoods by demolishing dilapidated residential dwellings and facilitating rehabilitation of residential dwellings that have deteriorated.

Action - The Building Department will increase enforcement of the State Housing Code in terms of removing dilapidated residential dwellings. The Building Department will also contact Self-Help Enterprises to determine their interest in providing housing rehabilitation services to Avenal. Funding for these actions will be from the general fund, CDBG funds, and housing "set aside" funds.

7. Encourage planned residential developments that are consistent with the following criteria:

a. The minimum site area for a planned residential development shall be five acres.

b. The density of the planned residential development shall not exceed the density of the underlying zone district.

c. Natural features, such as arroyos, hillsides, ridges and significant groups of trees shall be preserved in permanent open space.

d. Common usable open space shall be integrated into the planned development.

e. Residential design that fosters cluster development, zero-lot lines, or condominiums shall be encouraged.

Action - Adoption of the Land Use Element and these development criteria will implement this policy. The revised Zoning Ordinance should be amended to add



this criteria to its Planned Development overlay district.

8. Allow the construction of duplex units on corner lots in new residential subdivisions in order to increase residential densities and promote a more integrated neighborhood.

Action - The revised Zoning Ordinance should be amended to provide this development opportunity in its Single Family Residential district.

9. Multi-family projects shall only be located on collector or arterial roadways.

Action - Adoption of the Land Use Element will implement this policy.

10. High Density Residential designations shall not be applied to parcels larger than five acres.

Action - Adoption of the Land Use Element will implement this policy.

11. Multi-family projects should incorporate the following standards into the design of the project.

- a. Apartment units along major roadways should be staggered.
- b. On-street parking by residents or guests should be discouraged.
- c. Parking and trash enclosures should be screened from the view of persons traveling on adjacent streets or residing on adjacent properties.
- d. Landscaping along street frontages should include primarily trees, shrubs and turf.
- e. The landscaping, parking stalls and trash enclosures should be well-maintained.
- f. Two or more story multi-family projects should not have upper story windows on the side of building that faces adjacent single family dwelling unless sufficient setbacks exist that prevent over view from the upper story units.
- g. A portion of the off-street parking stalls should be covered.

Action - Adoption of the Land Use Element and these development criteria will implement this policy. The revised Zoning Ordinance should be amended to add this criteria to its multifamily residential districts.



COMMERCIAL DEVELOPMENT

Issues

A primary objective of the City of Avenal is to increase its sales tax base. To accomplish this objective, the City must reduce its sales tax "leakage". It must encourage Avenal residents to shop in town; it must entice persons who work in Avenal but live in other cities to shop in Avenal as in the case of persons working at the Avenal State Prison; and it must attract visitors and travelers to shop or eat in Avenal as could be the case if a highway commercial development was constructed at the intersection of Interstate 5 and State Highway 269.

Another primary objective of the City is to "revitalize" the Kings Street district. New uses (offices, retail establishments, restaurants), renovation of existing buildings, installation of landscaping and street furniture, and the opening of the movie theater, will implement this objective.

Policies and Action Programs

1. Encourage infill of vacant commercial properties along Skyline Blvd. and Kings Street.

Action - Implementation of the Land Use Element precludes commercial development in other parts of the community, except for highway and service commercial uses.

2. It shall be a high priority of the City to develop a well-designed, attractive highway commercial node at the intersection of State Highway 269 and Interstate 5.

Action - Development at this intersection shall undergo site plan review. For a project at this intersection, the City may want to contract with a design consulting firm to assist in the review of the building, parking and landscaping plans.

3. The Avenal Redevelopment Agency shall assist in facilitating the construction of a community shopping center along Skyline Blvd. Assistance could include land packaging, sales tax rebate, land writedown, or installation of infrastructure.

Action - The Agency will analyze properties along Skyline to identify two or three sites that could be developed for a community shopping center, which would range in size from 10 to 15 acres.

4. The Avenal Redevelopment Agency shall assist in attracting an operator for the



Avenal Theater.

Action - Agency staff will contact the operators of theaters in Coalinga, Lemoore and Hanford to determine the cost and logistics of opening and operating the Avenal Theater.

2. *2015*
5. The Avenal Redevelopment Agency shall assist in the implementation of the document entitled, Design Plan and Guidelines for the Commercial Areas in Avenal, which promotes the installation of landscaping, special street lights and the renovation of building facades.

Action - The Agency shall program a portion of its redevelopment funds towards the implementation this urban design document.

6. Encourage office development in the Kings Street commercial district.

Action - Implementation of the Design Plan and Guidelines for the Commercial Areas in Avenal will encourage this type of development in the Kings Street commercial district.

7. The City shall study the feasibility of moving city hall from its present site to a new site on Kings Street, which would serve to revitalize this commercial district and free up a valuable location for a potential community shopping center.

Action - The City Manager's office will prepare a feasibility report on this issue for review by the City Council.

8. Encourage a multifamily residential project in the Kings Street commercial district in order to bring additional people to this part of the community.

Action - The Agency should contact development firms about their interest in constructing a multifamily or senior citizen project in this district. The project should be designed to be compatible with the appearance of downtown buildings.

9. Encourage parking to be located at the rear of buildings, which are located on Kings Street.

Action - Through the site plan review process, parking will be required to be located at the rear of the property or, at the least, not dominate the frontage of the subject site.

10. Strengthen the visual connection between Kings Street and Skyline Blvd. with landscaping, lighting, and signing.

Action - The City's implementation of the Design Plan and Guidelines for the



Commercial Areas in Avenal and its current efforts to landscape Skyline Boulevard will help to tie the two districts together.

11. Any future conversion of homes into offices should be reserved for single family dwellings on Dome, Valley, Merced and Stanislaus streets and Central Avenue. This conversion should only be allowed to occur after the land on Skyline Blvd. and Kings Street are 80 percent developed and occupied.

Action - The planning department will determine when a general plan amendment needs to be initiated to provide for more office space in Avenal.

12. Service commercial uses should be located in areas of the community that do not pose conflicts for surrounding residents and other types of land uses.

Action - Implementation of the Land Use Element and the City's site plan review process will insure that these types of commercial uses do not pose conflicts for surrounding land uses.

13. Highway commercial uses should be located along arterial roadways and should be designed so that the site is easily accessible, well-designed and free of obtrusive signs.

Action - Implementation of the Land Use Element and the City's site plan review process will insure that these types of commercial uses are designed to effectively serve the traveling public.



INDUSTRIAL DEVELOPMENT

Issues

Industrial development is severely lacking in Avenal. Additional industrial development in Avenal would increase employment, diversify the economy, provide for increased "disposable" income that could boost sales tax revenues, and it would support increased residential development in the community.

Policies and Action Programs

1. Designate areas appropriate for industrial development that will not adversely effect the public's health or safety, nor cause land use conflicts with surrounding uses.

Action - The City shall consider amending its revised Zoning Ordinance to include performance standards to which new industrial uses would be required to comply with. Said standards for consideration are as follows:

- | | |
|-----------------|---|
| glare and heat: | Any operation producing intense glare or heat should be conducted within an enclosed building or with other effective screening in such a manner as to make such glare or heat completely imperceptible from any point along the property line. |
| vibrations: | Uses or operations should cause no inherent and recurring generated vibration perceptible along the property line, except for transportation operations and temporary construction. |
| light: | Exterior lighting, except for overhead street lighting and warning, emergency or traffic signals, should be installed in such a manner that the light source is sufficiently obscured to prevent glare or public streets and walkways or into any adjoining properties. |
| smoke: | Smoke emitted into the atmosphere from any air contamination source or emission whatsoever should be of such a shade or density as not to obscure an observer's vision to a degree in excess of twenty percent. |

2. Promote limited industrial development at the intersection of the Avenal Cutoff Road and Interstate 5 to take advantage of its access to the Interstate and the close proximity to PG & E's natural gas plant.



Action - Implementation of the Land Use Element provides for industrial development at this intersection.

3. Establish Avenal's industrial park east of State Highway 33 and north of the new waste water treatment plant.

Action - Implementation of the Land Use Element provides for industrial development at this location. About 334 acres of this area is designated industrial "reserve". This land should be maintained in agriculture until the land designated for industry is 80 percent developed.

5. Insure that the Avenal water system has adequate capacity to serve future industrial uses.

Action - The Engineering Department will insure that adequate funding is provided for the expansion and upgrading of the water system.

5. Insure that the Avenal wastewater treatment plant has adequate capacity to serve future industrial uses.

Action - The Engineering Department will insure that adequate funding is provided for the expansion and upgrading of the wastewater treatment plant.

6. To insure that Avenal's natural environment is protected, the City shall only encourage industrial uses that have a minimum impact on air and water quality.

Action - Inclusion of the aforementioned performance standards into the revised Zoning Ordinance will minimize an industry's impact on the environment.



AGRICULTURAL LAND PROTECTION

Issues

Agriculture is an important part of Avenal's economy. Preservation of agricultural lands will help support the local economy in addition to protecting a valuable natural resource.

Policies and Action Programs

1. To protect intensive and extensive agricultural operations in Avenal the minimum parcel sizes for these types of operations shall be 40 and 160 acres, respectively.

Action - The revised Zoning Ordinance provides minimum parcel sizes for these two types of agriculture.

2. Encourage owners of agricultural parcels that are not designated for urban development by Avenal's Land Use Element to enter the agricultural preserve program.

Action - The planning department can inform surrounding farmers of this opportunity to enter the agricultural preserve program.

3. Increase overall residential densities in the City of Avenal so as to require less urbanization of surrounding agricultural lands.

Action - The Land Use Element and the revised Zoning Ordinance provide for increased residential densities within the planning area.

PUBLIC FACILITIES

Issues

The construction of public facilities, like parks and schools, and the protection of existing public facilities, like the airport and the landfill, can provide long-lasting benefits for a community. Neighborhoods where new parks and schools are constructed can be "revitalized". Protection of the airport and the landfill from conflicting land uses can insure that these facilities will continue to operate free of



these conflicts and continue to serve the public and support the local economy.

Policies and Action Programs

1. To properly balance the community in terms of public facilities, a new park and school site will be located in the south part of Avenal.

Action - Adoption of the Land Use and the Open Space, Conservation, Parks and Recreation elements will implement the above policy.

2. To help revitalize the Kings Street commercial district, the City should encourage the U.S. Post Office to locate their new facilities in this area.

Action - The Redevelopment Agency shall contact Post Office officials to discuss with them the possibility of relocating their building to the Kings Street district.

3. The City should preclude the intrusion of any land uses that are incompatible with the Avenal landfill operation.

Action - Adoption of the Land Use and the Open Space, Conservation, Parks and Recreation elements will implement the above policy.

4. The City should preclude the intrusion of any land uses that are incompatible with the Avenal wastewater treatment plant operation.

Action - Adoption of the Land Use and the Open Space, Conservation, Parks and Recreation elements will implement the above policy.

5. Resolve the flooding problem associated with Arroyo del Camino by constructing a park/pond south of Kern Street and east of Seventh Avenue.

Action - Adoption of the Land Use and the Open Space, Conservation, Parks and Recreation elements will implement the above policy.



LAND USE DESIGNATION/ZONING DISTRICT MATRIX

Table No. 2 below details which zone districts are consistent with the land use designations contained in the Avenal Land Use Element. This matrix will be valuable to the Planning Department as they begin the rezoning of the community to be consistent with the adopted Land Use Element.

Table No. 2
General Plan/Zoning Consistency Matrix

<u>LAND USE DESIGNATIONS</u>	<u>AVENAL ZONE DISTRICTS</u>										
	<u>A-E</u>	<u>A-I</u>	<u>R-1</u>	<u>R-2</u>	<u>R-3</u>	<u>G-C</u>	<u>D-C</u>	<u>S-C</u>	<u>H-C</u>	<u>P-F</u>	<u>M</u>
agriculture	•	•									
open space	•	•									
public facilities										•	
low density residential			•								
medium density residential			•	•							
high density residential				•	•						
residential "reserve"		•									
downtown commercial							•				
community commercial						•					
service commercial								•			
highway commercial									•		
industry											•
industrial "reserve"		•									

Note: "•" denotes consistency between land use designation and zone district; a blank denotes lack of consistency.

Source: Collins & Associates, Planning Consultants, 1992

CHAPTER

3

CIRCULATION ELEMENT





CHAPTER 3 • CIRCULATION ELEMENT

INTRODUCTION

The Circulation Element is second only to the Land Use Element in terms of importance to a community. It has a significant impact on existing and future Avenal residents because it determines the route and mode by which persons are going to travel within the community and to other destinations outside the community.

Section 65302 (b) of the Government Code indicates that the circulation element must disclose the general location and extent of existing and proposed major thoroughfares, transportation routes and other public utilities and facilities, all correlated with the land use element of the general plan.

The Court has indicated that in addition to indicating that roadway improvements must be consistent with the General Plan, *Friends of "B" Street . et. al. v. City of Hayward, et. al.*, 106 Cal. App. 3d 988 (1980), there must be a correlation between the circulation and land use elements, *Concerned Citizens of Calaveras County v. Board of Supervisors of Calaveras County* 166 Cal. App. 3d 90 (1985). Generally, correlation is dependent upon the two elements using the same population and land use projections.

CIRCULATION ELEMENT ORGANIZATION

The Avenal Circulation Element contains six primary components:

- 1) existing conditions and projections;
- 2) a description of each roadway classification;
- 3) evaluation of existing circulation system;
- 4) a circulation map illustrating the alignment of existing and proposed roadways within the planning area;
- 5) community goals; and
- 6) issues, policies and action programs.



EXISTING CONDITIONS AND PROJECTIONS

Information on existing circulation conditions in Avenal is contained in Section No. 2 of this document. Included in this section is information on roadway capacities, traffic counts, roadway geometrics, and truck routes.

Population Projections

In order to determine the amount of land for each land use category that will be required by Avenal within the 18-year planning period, projections involving population and land use acreages have been calculated. In Chapter 2, Land Use Element, three non-prison population projections - low, medium and high - were provided for the year 2010. These 18-year population projections are - low, 2651 persons; medium, 4022 persons; and high, 5399 persons.

Land demands for other uses, such as commercial, industrial, public facilities, and open space, were not calculated because in Avenal there is not a strong correlation between population growth and development in these land use categories. For example, Avenal's population has increased from about 4000 in 1980 to 5000 in 1990 - a 25 percent increase. Yet, the growth in industrial and commercial development has almost been negligible during this time period.

Traffic Volume Projections for Local Roadways

Traffic volume projections for the local roadway system have been derived by multiplying the number of projected residential dwelling units times the number of trips per day that are generated by that type of residential dwelling. Residential land demand for 2010 is calculated below.

Low Estimate

607 single family residential units / 4 units per acre =	152.0 acres
231 multi-family residential units / 15 units per acre =	15.4 acres
17 mobile home units / 8 units per acre =	<u>2.2 acres</u>
	169.6 acres

Medium Estimate

921 single family residential units / 4 units per acre =	230.0 acres
350 multi-family residential units / 15 units per acre =	23.35 acres
26 mobile home units / 8 units per acre =	<u>3.24 acres</u>
	256.59 acres

High Estimate

1237 single family residential units / 4 units per acre =	309.0 acres
470 multi-family residential units / 15 units per acre =	31.36 acres
35 mobile home units / 8 units per acre =	<u>4.35 acres</u>
	344.71 acres



The above projections indicate that Avenal will need between 170 and 345 acres of land for residential development. The amount of traffic that would be generated from this amount of residential land is a function of the type of residential unit and the number of trips per day generated by each type of residential land use. Estimated traffic counts for 2010 are calculated below.

Low Estimate

607 single family residential units x 10 trips per day =	6070 trips per day
231 multi-family residential units x 8 trips per day =	1848
17 mobile home units x 6 trips per day =	<u>102</u>
	8020 trips per day

Medium Estimate

921 single family residential units x 10 trips per day =	9210 trips per day
350 multi-family residential units x 8 trips per day =	2800
26 mobile home units x 6 trips per day =	<u>162</u>
	12172 trips per day

High Estimate

1237 single family residential units x 10 trips per day =	12370 trips per day
470 multi-family residential units x 8 trips per day =	3760
35 mobile home units x 6 trips per day =	<u>210</u>
	16340 trips per day

By 2010, between 8020 and 16340 additional residential trips per day will be using local streets in Avenal. Roadways that will be most impacted by this growth in traffic volumes will be collector streets; the least impacted will be local streets. These trips will be distributed over a 24-hour period with peak conditions generally occurring between the hours of 7:00-9:00 a.m. and 4:00-6:00 p.m..

Projected traffic volumes for Avenal in 2010 are contained in Table No. 3 and displayed in Exhibit No. 4. They come from two sources - the traffic volume calculations that are based on residential land demand and CALTRAN'S traffic model for State highways.



Table No. 3
Projected Traffic Volumes

Projected Conditions on City Streets

Street	Lanes	Type	Daily Volume	Capacity	V/C	LOS
San Joaquin						
E/O S.H. 33	2	Collector	2900	9,000	.32	A
E/O Fifth	2	C	4000	9,000	.44	A
W/O S.H. 269	2	C	4500	9,000	.50	A
Kings						
E/O Third	2	C	4000	9,000	.44	A
First						
N/O San Mateo	2	C	3600	9,000	.40	A
Fifth						
N/O San Mateo	2	C	3000	9000	.33	A
Seventh						
S/O S.H. 269	2	C	2600	9,000	.29	A
N/O S.H. 33	2	C	2700	9,000	.30	A
E Avenue						
S/O San Joaquin	2	C	3000	9000	.33	A
Corcoran						
S/O Kern	2	C	1600	9000	.18	A
Hydril Road						
E/O SH 269	2	C	1500	9000	.17	A
W/O SH 269	2	C	2800	9000	.31	A

Projected Conditions on State Highways 33 and 269

Segment	Lanes	Peak Hour ¹	Volume Daily	LOS
S.H. 269				
@ Seventh Ave.	2	700	7000	C ²
S.H. 33				
@ SH 269	2	450	4500	B ³

1 Estimated to be 10 percent of Daily Volume

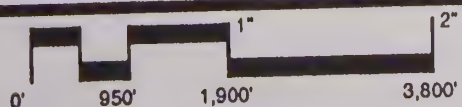
2 Based on HCM methodology for evaluating two-lane highways with peak hour volumes

3 Based on HCM system planning evaluation



EXHIBIT 4

AVENAL GENERAL PLAN



COLLINS & ASSOCIATES
PLANNING CONSULTANTS

PROJECTED TRAFFIC VOLUMES

PROJECTED VEHICLE TRIPS PER DAY AT GIVEN LOCATIONS



CIRCULATION SYSTEM DESIGNATIONS

Avenal's circulation system contains roadways that are designated freeway, arterial, collector or local (see Exhibit No. 5) Definitions for these roadways are as follows:

Freeway - mobility with very limited access.

Arterial - mobility with access to collectors, local streets and major traffic generators.

Collector - connects local streets with arterials and also provide access to adjacent land uses; thus balances mobility and access

Local - provides access to adjacent land uses exclusively.

Freeway

Based on the above definitions, Avenal has only one roadway that is designated as a freeway - Interstate 5. Interstate 5 has state-wide significance in that it links northern, central and southern California.

Arterials

Avenal has two State highways that serve as arterials, State Highway 33 and 269. State Highway 33 connects Avenal with Coalinga to the north and State Highway 41 to the south. Highway 269 connects Avenal with Interstate 5 and State Highway 198 to the east. Highway 269, which is also called Skyline Boulevard, provides access to Avenal's commercial district.

Arterials generally have a planned right-of-way of 100 feet. Highway 33 has two travel lanes with unpaved shoulders. Highway 269 has two travel lanes, two parking lanes and a 15-foot center turning median.

Collectors

The Circulation Element designates a number of existing and future roadways as collectors. Existing north/south collectors are Third and Fifth Avenues, north of Highway 269, Seventh Avenue, and Corcoran Avenue. Future north/south collectors are E Avenue and 36th Avenue. Existing east/west collectors are San Joaquin Street and Kings Street. Future east/west collectors are Hydril Road and an unnamed street, which is south of Kern Street and connects 36th Avenue with Seventh Avenue.

Collectors have a right-of-way width of not less than 60 feet, nor more than 84 feet. They generally contain two travel lanes and two parking lanes.



In Table No. 5 a Level of Service (LOS) interpretation is provided. This rating system effectively gives the public, the public works department and local decision-makers a letter rating for the level of roadway congestion, "A" being the best and "E" being the worst.

Table No. 5
Level of Service Description

<u>LOS</u>	<u>DESCRIPTION</u>
A	Free flow, low volume, high operating speed, high maneuverability.
B	Stable flow, moderate volume, speed somewhat restricted by traffic conditions, high maneuverability.
C	Stable flow, high volume, speed and maneuverability determined by traffic conditions.
D	Unstable flow, high volumes, tolerable but fluctuating operating speed and maneuverability.
E	Unstable flow, high volumes approaching roadway capacity, limited speed, intermittent vehicle queuing.
F	Forced flow, volumes lower than capacity due to very low speeds; heavy queuing of vehicles, frequent stoppages.

Source: 1985 Highway Capacity Manual

A capacity analysis of roadways in Avenal is displayed in Table No. 6 A review of this data indicates that all local roadways are operating at a LOS of "A" or better and State highways at an LOS of "B" or better.



EVALUATION OF EXISTING CIRCULATION SYSTEM

The evaluation of Avenal's circulation system focuses on three major issues - roadway capacity, connectivity, and traffic safety. Capacity refers to a roadway's ability to effectively carry traffic - without congestion and periodic stops and starts. Connectivity pertains to how well various sections of the city are connected together with roadways. Is it easy to travel from one section of the city to another? Traffic safety is measured how safe the roadway is for the traveler. For example, does a collector or arterial roadway contain a number of intersections that potentially create unsafe traffic conditions.

Capacity Evaluation

The capacity of a roadway to carry traffic is a function of street width, the number of travel lanes, the number of intersecting driveways or streets, the presence of on-street parking, and other factors. Generally, a roadway's capacity is markedly consumed during peak times - 7:00 to 8:30 a.m., 12:00 to 1:00, and 4:30 to 6:00 p.m..

Table No. 4 provides capacities for a service level "E" for typical roadways in most cities. Service level "E" is the worst condition a roadway can experience. Operating at this Level of Service (LOS) means that the roadway is experiencing extreme congestion (grid-lock)

Table No. 4
Daily Capacities for Avenal Roadways

<u>ROADWAY</u>	<u>LEVEL "E" CAPACITIES</u>
4 Lane Freeway	80,000 vehicles per day
4 Lane Divided Arterial	27,000
2 Lane Divided Arterial	15,000
4 Lane Undivided Arterial	24,000
2 Lane Undivided Arterial	12,000
4 Lane Divided Collector	20,000
2 Lane Divided Collector	10,000
4 Lane Undivided Collector	18,000
2 Lane Undivided Collector	9,000

Source: 1985 Highway Capacity Manual



Table No. 6
Current Daily Traffic Volumes

Current Conditions on City Streets

Street	Lanes	Daily Type1	Daily Volume2	Capacity	V/C	LOS
San Joaquin						
E/O S.H. 33	2	C	850	9,000	.09	A
E/O Fifth	2	C	1438	9,000	.16	A
W/O S.H. 269	2	C	3478	9,000	.39	A
Kings						
W/O First	2	C	338	9,000	.04	A
E/O Third	2	C	3062	9,000	.34	A
Third						
N/O San Joaquin	2	C	1934	9,000	.21	A
N/O Merced	2	C	992	9,000	.11	A
N/O S.H. 33	2	C	1268	9,000	.14	A
Seventh						
S/O S.H. 269	2	C	2962	9,000	.33	A
N/O S.H. 33	2	C	2108	9,000	.23	A

1 A: Arterial; C: Collector

2 Source: City of Avenal traffic counts (April, 1992)

Current Conditions on State Highways 33 and 269

Segment	Lanes	Volume 1 Peak Hour	AADT	LOS 2
S.H. 33				
North of 36th Ave	2	170	1,600	A
North City Limits	2	160	1,500	A
S.H. 269				
North of S.H. 33	2	480	4,750	B
North City Limits	2	360	3,600	B

1 Source: Caltrans, 1990 Traffic Volumes for Routes 269 and 33

2 Source: Caltrans, Route Concept Reports for Rts. 269 and 33

(Note: The LOS ratings are based on peak hour volumes)



Connectivity

Avenal is fortunate that its current grid roadway system provides vehicular access to all parts of the urbanized portions of the City. However, new growth areas will require new roadways. These new growth areas, which will require connection to Avenal's existing roadway system, are located north of the Avenal District Hospital, north of the Avenal High School, and in the southeastern quadrant of Avenal, between Seventh and 36th Avenues. Connecting new growth areas to Avenal's current roadway system will require the construction of new roadways and the reconstruction of existing, underdeveloped roadways.

Traffic Safety

A roadway system that is safe and efficient - free of congestion - is a primary circulation goal of all cities. Two roadways in Avenal, both State highways, present the greatest threat to the traveling public's safety.

State Highway 269 (Skyline Blvd.) intersects with numerous streets in Avenal at odd angles. In 1989, QUAD Consultants prepared a report entitled, Traffic Engineering Study, Major Street Plan and Odd-Angled Intersections. Based on findings in this report, the City reconfigured some intersections to form right angles and at other intersections the minor street were changed into cul-de-sacs. These street improvements enhanced traffic safety along this highway.

State Highway 33 (Laneva Blvd.) has many of the same roadway problems Highway 269 had prior to its reconstruction. There are numerous alleys and streets that intersect with Highway 33 at odd-angles. In addition, a number of land uses along this highway have direct access to this roadway. With current traffic sometimes exceeding speeds of 50 miles per hour and traffic volumes increasing annually, the City should analyze the section of highway from "E" Street to Seventh Avenue to determine which streets should be closed or reconfigured.



CIRCULATION GOALS

Circulation goals express general community values as they relate to travel, traffic safety, mobility, and funding for maintenance and construction of roadways. Circulation goals for Avenal are as follows:

1. INSURE THAT STREETS IN AVENAL ARE NOT CONGESTED.
2. INSURE QUIET AND SAFE NEIGHBORHOOD STREETS.
3. PROVIDE EFFICIENT CIRCULATION ACCESS TO ALL PARTS OF AVENAL.
4. PROVIDE AMPLE OFF-STREET PARKING FOR NEW USES LOCATING IN AVENAL.
5. ESTABLISH TRUCK ROUTES THROUGH AVENAL THAT ARE NOT DISRUPTIVE TO RESIDENTS OR BUSINESSES.
6. DEVELOP STREETS THAT ARE WELL-DESIGNED AND VISUALLY PLEASING.
7. PROMOTE ALTERNATIVE MODES OF TRANSPORTATION, INCLUDING BIKES, BUS AND WALKING.
8. PROVIDE SAFE, CONVENIENT AND ACCESSIBLE PEDESTRIAN ACCESS TO ALL PARTS OF AVENAL.
9. IMPROVE LOCAL AIR QUALITY BY DESIGNING AN EFFICIENT CIRCULATION SYSTEM AND ENCOURAGING ALTERNATIVE MODES OF TRANSPORTATION.
10. PROVIDE FOR LONG-TERM FINANCING FOR STREET CONSTRUCTION AND MAINTENANCE.

THE CIRCULATION PLAN

The Circulation Plan is divided into three parts. The first part is the identification and discussion of general circulation issues, such as traffic safety, alternative modes of transportation and parking. The second part is a listing of policies that will guide future decisions in regards to these circulation issues. The third part of the Plan is the action program. These programs will identify what actions are required to implement the policies.



TRAFFIC

Issues

One thing that people who live in cities tend to agree on is that there is too much traffic on their street. Even if the roadway is operating at a LOS of A, people will still complain that there is too much traffic passing in front of their home. While it is difficult to improve on a roadway that has a LOS of A, cities can embrace policies and action programs that will insure that traffic impacts in the community will be kept to a minimum.

Policies and Action Programs

1. LOS "C" will be the desirable service level in Avenal at which freeways, highways, arterials and collectors will operate.

Action - The Public Works Department in coordination with CALTRANS will monitor LOS levels for all roadways in Avenal. The Department will program into its 5-year capital budget, street improvements that will insure an LOS of C is not exceeded in the city limits. Funds for these street improvement projects will come from gas tax and transportation funds.

2. Service Level B will be the desirable service level in Avenal at which local streets will operate.

Action - The Public Works Department will monitor LOS levels for local streets in Avenal. The Department will program into its 5-year capital budget street improvements that will insure an LOS of B is not exceeded in the city limits. Funds for these street improvement projects will come from gas tax and transportation funds.

3. All street improvement projects, including widening, closing, or constructing new roadways, will be reviewed by the Planning Department to confirm that the project is consistent with the Circulation Element.

Action - The Planning and Public Works Departments will review street projects to determine consistency with the Circulation Element.

4. The City of Avenal will insure that transportation and gasoline tax funds and other funds that can be used for roadway projects are properly programmed through the 5-year capital budget to implement the policies of the Circulation Element.

Action - The Public Works Director and City Manager will coordinate through the



annual budget process to insure that Circulation Element policies are being properly implemented.

5. Land use projects which generate large amounts of traffic shall be precluded from channeling traffic onto local roadways.

Action - The Planning Department shall recommend denial of discretionary land use projects to the Planning Commission and City Council that are inconsistent with this policy.

ARTERIAL ROADWAYS

Issues

Except for freeways, arterial roadways carry the greatest amount of traffic in Avenal. Not only are traffic volumes higher but also the speed of travel. Potentially, these roadways have the greatest traffic safety problems because of these factors.

Most persons in Avenal will travel on an arterial roadway at least once a day. Travel efficiency on these roadways is important for two reasons: (1) Stop and start conditions cause the traveler to be late for their destination. (2) These types of conditions cause greater amounts of air pollution - already a significant environmental problem in the Valley. Traffic that moves smoothly minimizes these two problems.

Policies and Action Programs

1. Driveways that intersect with arterials should be kept to a minimum and, if possible, should be reduced when redevelopment occurs along an arterial roadway.

Action - Through the site plan review process, the Planning and Engineering Departments will discourage development designs that create this condition.

2. The City should study the feasibility of closing certain streets and alleys that intersect with State Highways 269 and 33.

Action - The Planning and Engineering Department will prepare a report that analyzes land uses and intersecting roadways along these arterials. This report will contain recommendations regarding future land use, redevelopment, or street improvement projects that will insure that these arterials will operate more efficiently and safely.

3. Left turn lanes shall be constructed on arterials where they intersect with other arterials or collectors.



Action - The Public Works Department will coordinate with CALTRANS to insure that left turn lanes are constructed along State Highways 33 and 269.

4. New driveways constructed onto arterial roadways shall meet CALTRAN'S construction standards.

Action - Through Avenal's site plan review process, CALTRANS will review all new construction projects along State Highway 33 and 269.

5. Curbs at the intersections of arterials and collectors should be red-curbed in order to provide a good sight line for traffic pulling into the intersection.

Action - The Public Works Department will coordinate with CALTRANS to identify which curbs at the aforementioned intersections should be red-curbed.

6. Arterial roadways should have sufficient right-of way to contain 4 lanes for through traffic, two parking lanes and a median with a single left turn lane.

Action - The Public Works Department will coordinate with CALTRANS to insure that sufficient right-of-way will be dedicated when development occurs along State Highways 33 and 269.

COLLECTOR ROADWAYS

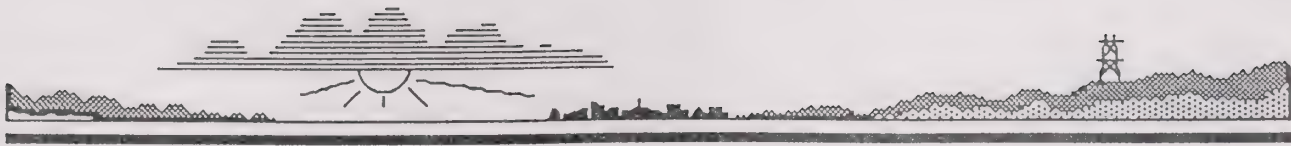
Issues

Aside from freeways and arterials, collectors carry the greatest amount of traffic in a city. Unlike freeways and arterials, collector roadways traverse residential neighborhoods. These are the streets that drain traffic from the neighborhoods and convey it towards other collector or arterial roadways.

Because collectors pass through neighborhoods, their effectiveness to channel traffic in a safe and effective manner can be diminished by land uses in a neighborhood. For example, a new residential subdivision that allows residential dwellings to front onto a collector creates a situation where numerous driveways from these dwellings intersect with the collector. This creates a traffic safety problem for persons backing out onto the collector as well as for the person traveling along the collector.

Collectors by their nature can have the greatest impact on the residential neighborhoods of a city. They can generate noise that impacts residents and their appearance can either enhance or detract from a neighborhood's visual appeal.

Policies and Action Programs



Policies and Action Programs

1. Residential driveways that intersect with collectors should be kept to a minimum and, if possible, should be reduced when redevelopment occurs along a collector roadway.

Action - Through the subdivision review process, the Planning and Engineering Departments will recommend design actions that implement this policy.

2. The curbs at the intersections of collectors and collectors and arterials and collectors should be red-curbed in order to provide a good sight line for traffic pulling into the roadway.

Action - The Public Works Department will coordinate with CALTRANS to identify which curbs at the aforementioned intersections should be red-curbed.

3. Collector roadways should have sufficient right-of way to contain two lanes for through traffic, two parking lanes and a median with a single left turn lane.

Action - The Public Works Department will insure that sufficient right-of -way will be dedicated when development occurs along collector roadways.

4. To enhance the appearance of the neighborhoods along the following collectors, San Joaquin Street, Seventh Avenue, and the to-be-constructed Hydril Road and 36th Avenue, a landscaped median shall be installed.

Action - The Public Works Department shall prepare a 15-year improvement program that implements the above policy. Funds for this project will come from tax increment, gas tax, transportation monies and private contributions.

5. New development occurring along collectors shall dedicate the appropriate amount of right-of-way and shall construct their fair-share of that portion of the collector that abuts the project site.

Action - The Public Works Department through the subdivision review process shall insure that the proper amount of street dedication and road improvements are secured prior to final approval of the subdivision.

STREET DESIGN

Issue

The primary purpose of a street is to convey traffic from one destination to another. Streets do not have to be a sterile public improvement that detracts from the



appearance of a neighborhood. They can be improvements that enriches the appearance a neighborhood and creates a unifying theme of trees, lighting and signage.

Policies and Action Programs

1. The City shall have prepared a streetscape design plan, which will establish a 15-year improvement program for the construction of landscaped medians for specific roadways in the community. This Plan should include details for lighting, landscaping and signing.

Action - The Engineering and Planning Departments will prepare the streetscape design plan. Funds will come from tax increment, gas tax and transportation funds.

PARKING

Issues

The success of commercial businesses is sometimes dependent upon adequate parking. The parking must be in close proximity to the commercial business, it must be safe, and if possible, it should exemplify a pleasant parking environment - landscaped, well lit, and large parking stalls.

For other uses, such as public facilities, churches, apartments, and industries, adequate on-site parking is important so that surrounding land uses are not negatively impacted by persons parking on or in front of these properties.

Policies and Action Programs

1. For new uses locating along arterial and collector roadways on-street parking shall be discouraged.

Action - Through the site plan review process, the Planning and Engineering Departments will insure that the design of the project discourages on-street parking on these types of roadways.

2. Parking lots for new uses shall contain landscaping, proper lighting and shall be properly designed to insure maneuverability of vehicles.

Action - Through the site plan review process, the Planning and Engineering Departments will insure that the design of new parking lots contains the above features.



3. For commercial uses along Kings Street and Skyline Blvd. access to parking lots should be provided by alleys that parallel these streets.

Action - Through the site plan review process, the Planning and Engineering Departments will insure that the design of new parking lots along these streets have access to alleys.

ALTERNATIVE MODES OF TRANSPORTATION

Issues

Alternative modes of transportation are important to different people for different reasons. For a low-income person or a person on a fixed income, transit service may be the only means of traveling to the store, doctor, or to visit a friend in another city. For the person who is concerned about air pollution, riding the bus may be their way of improving the air environment. For the family who enjoys riding bikes, this form of transportation becomes a recreational activity.

Policies and Action Programs

1. The City shall promote all modes of transportation, including bus, bicycle and walking.

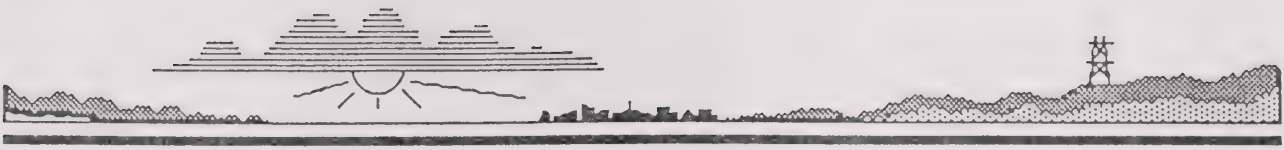
Action - Through the 5-year capital budget, the City Council should insure that gasoline tax and transportation funds are spent on all modes of transportation.

2. The City shall prepare a bikepath design plan, which establishes bikepath loop which extends along Hydril Road, 36th Avenue, a to-be-constructed street south of Kern, Seventh Avenue, San Joaquin Street, and E Avenue.

Action - The Engineering and Planning Departments will prepare the bikepath design plan. Funds will come from tax increment, gas tax and transportation funds.

3. The City shall delineate a trail system for the Nature Preserve that can be used by pedestrians and horseback riders.

Action - The City should establish a citizens committee to design this trail system.



Issues

Truck traffic can adversely affect residential neighborhoods because of the noise they generate. Further, truck traffic can damage local roadways because the road beds are not designed to carry heavy loads. To repair damaged roadways can be very expensive for cities.

Policies and Action Programs

1. To avoid the adverse impacts associated with truck traffic, truck routes through the urbanized portions of Avenal shall be restricted to arterial roadways.

Action - The Public Works Department shall post both State highways as truck routes.

ALLEYS

Issues

Alleys have their good and bad points. In commercial areas they provide a paralleling road system for traffic that is traveling to businesses that back on to the alley. In residential neighborhoods, they can become blighted because they fall into disrepair and tend to attract litter, garbage and other types of debris.

Policies and Action Programs

1. Alleys serving commercial districts should be upgraded and improved.

Action - Through the site plan review process, new commercial development should be required to upgrade that portion of the alley on which it backs onto.

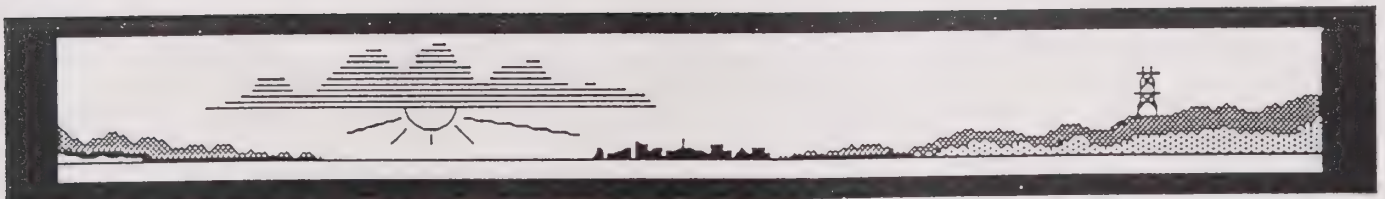
2. Alleys should be prohibited in new residential neighborhoods.

Action - Through the subdivision review process, the Planning and Engineering Departments should preclude alleys in new subdivisions.

C H A P T E R

4

OPEN SPACE, CONSERVATION,
PARKS AND RECREATION
ELEMENT





CHAPTER 4 • CONSERVATION, OPEN SPACE, PARKS AND RECREATION

INTRODUCTION

Open space, parks, and recreation facilities enhance the quality of life in a community. The conservation of these types of resources is an integral part of providing for the needs and welfare of a community. Conservation of open space takes planning for the future. If these areas are not planned for at this time and set aside for the future, a city runs the risk of losing them to development. Open space lands are undeveloped areas that provide a low density perception in an urban area, define the edge of a community, and provide the sight lines that allow a view of surrounding Kettleman Hills, agricultural lands or other open space uses. Most people think of open space as "park" areas, but a large portion of a city's open space is provided by residential yard areas and right-of-way along streets.

A park is an open area that provides an assortment of recreation and leisure opportunities for a community. A park can include school playgrounds, community recreation parks, community centers, and other publicly-owned outdoor recreation areas. Parks can supply active as well as passive recreation. Activities can range from family picnics to organized sporting events.

One of the primary purposes of parks is to contribute to Avenal's quality of life. The City accomplishes this through the provision of convenient, well-equipped, and maintained sites and facilities, conservation of natural resources, and a comprehensive and quality program of recreational activities and services for all citizens of the community.



THE ELEMENT

The open space portion of this Element identifies lands that are appropriate for open space and parks acquisition as well as the development of recreation programs on these lands. The Element establishes goals, policies, action programs/standards for the conservation and treatment of open space.

Government Code Section 65560 et seq. defines open space as land that can be used for any of the following uses:

- conservation of natural resources.
- managed production of resources.
- outdoor recreation.
- preservation of lands for the purpose of protecting the public's health and safety.

Specific requirements of the conservation portion of the Element are identified in Government Code Section 65302 (d). This portion of the element includes "the conservation, development and utilization of natural resources, including water, forests, soils, rivers and other waters, wildlife, and other natural resources." Items that are addressed in this category include the conservation of:

- view opportunities
- soils
- agricultural lands
- mineral resources
- air quality
- wildlife habitat

The Recreation and Parks Element is an optional element of the General Plan. This Element identifies existing and potential recreational opportunities within the community. Since it is both closely related to the City's open space system, integration of the three documents into one element makes good planning sense.



EXISTING CONDITIONS

The City of Avenal is located at the western edge of the San Joaquin Valley. The city limits straddle the Kettleman Hills, while the urbanized portion of the city is located on the Kettleman Plain. The surrounding foothills provide a scenic backdrop for the community and provide numerous view opportunities to its residents. In addition, the hills provide a wide variety of conservation, open space, and parks and recreational amenities, including habitat areas, agricultural resources, mineral resources, and scenic vistas.

Discussed below are specific issues relating to the Conservation, Open Space, Parks and Recreation Element. A more detailed description of these issues is also found in Section 2 of this document.

Air Quality

Avenal enjoys a moderate climate with warm summers and generally mild winters. The City is located within the San Joaquin Valley Air Basin. The California Air Resources Board (CARB) air monitoring station is located in Hanford where all criteria air pollutant levels are measured. According to CARB, the Valley exceeds two important pollutant criteria: ozone and particulate matter, and is, therefore, designated as a non-attainment area. There are several factors which cause this to occur. They are:

1. The Valley terrain traps stagnant or polluted air.
2. A combination of weather and climate contributes to the formation of smog.
3. The primary factor is growth. With more and more people moving to the Valley, smog is produced by fossil fuel burning and emissions from factories.

Water Resources

Avenal currently obtains its water from the California Aqueduct which runs along the northern boundary of the city limits. The groundwater basin under the Kettleman Plain is separate and distinct from the San Joaquin Valley basin. The groundwater in this area can not be utilized for domestic use due to high concentrations of sulfate, nitrites and sodium.

Avenal does not have any year-round water courses that traverse the city, however, numerous intermittent water courses, called arroyos, periodically carry waters during periods of heavy precipitation.



Avenal is located on the Kettleman Plain, which lies between the Kettleman Hills to the north and east and the Kreyenhagen Hills to the south and west. During intense storms, runoff that emanates from these hills causes flooding along the bottom of the valley floor and adjacent to certain drainage courses. This water ultimately flows in a southeasterly direction to a terminal point in the Tulare Lake Basin, 18 miles to the south. Intermittent creeks, such as Arroyo Curvo and Arroyo Esquinado flow only during periods of higher rainfall. Arroyo del Camino, which can flood adjacent properties, runs in a north south direction through the eastern portion of the community from Skyline Blvd. to an area south of Kern Street (see Exhibit No. 6).

Agricultural Resources

The City of Avenal's main industries have historically been based on the oil and gas production and distribution industries. However, as the oil and gas industries have declined, agriculture has taken over as the main industry in the community. Agricultural lands have provided a strong economic base for the community as well as a rural landscape and open space system that surrounds the City. As Avenal continues to grow, the surrounding agricultural lands are taken out of production to accommodate residential, commercial, and industrial growth.

In 1965, the State adopted the Williamson Act to address the issue of loss of agricultural land due to urbanization. The Williamson Act provides property owners with a reduction in their property tax if they agree to maintain their land in agriculture for a ten-year period. As shown on Exhibit No. 7 indicates that many landowners have entered into a Williamson Act contract. This ensures, at least for the near-future, that agricultural lands will remain undeveloped thereby enhancing the open space feeling around Avenal.

Mineral Resources

Within the Planning Area, the majority of open land consists of property owned by the oil and gas companies. These lands also provide a large portion of the open space lands surrounding the urbanized portion of Avenal. With the exception of areas where oil and gas pipes, storage facilities, and refining infrastructure dot the hillsides, the hills leading into the urbanized area provide scenic opportunities for the community as well as habitat area for native wildlife. At this time, use of these areas by the oil companies is minimal. Conservation of these hillsides and their mineral resources is an important aspect of maintaining the community's identity.

Soil Resources

The soils in the Avenal area are described by the Soil Survey of Kings County, prepared by the Soil Conservation Service, Department of Agriculture. The general soil map of this Survey shows two major soil groups in Avenal: the Kettleman-Cantua-Merced soils, located in the Kettleman Hills, and the

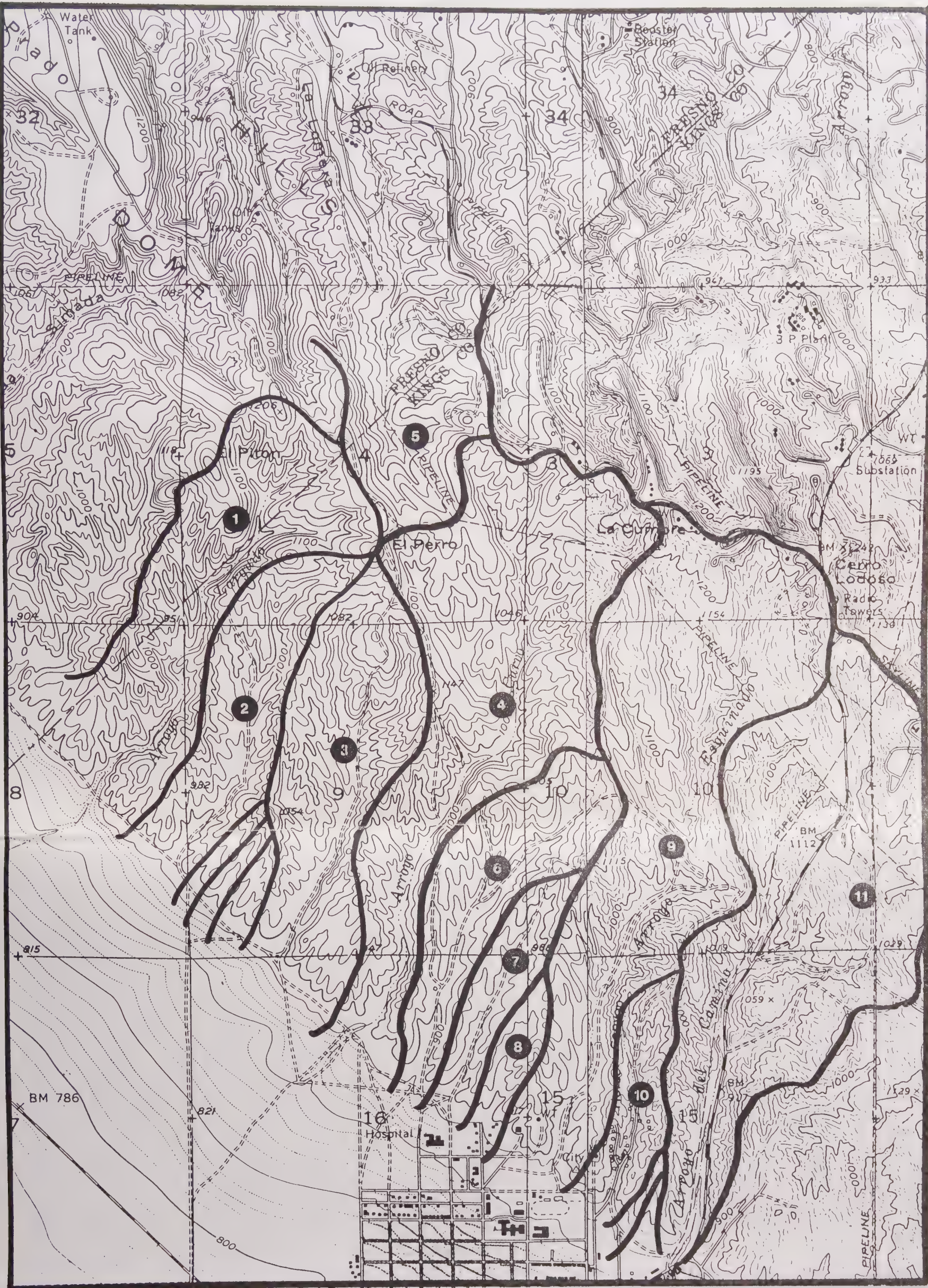
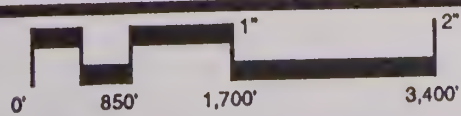


EXHIBIT 6

AVENAL GENERAL PLAN



COLLINS & ASSOCIATES
PLANNING CONSULTANTS

DRAINAGE AREAS

NUMBERS REFER TO INDIVIDUAL DRAINAGE BASINS
DISCUSSED IN TABLE 10 IN SECTION 1

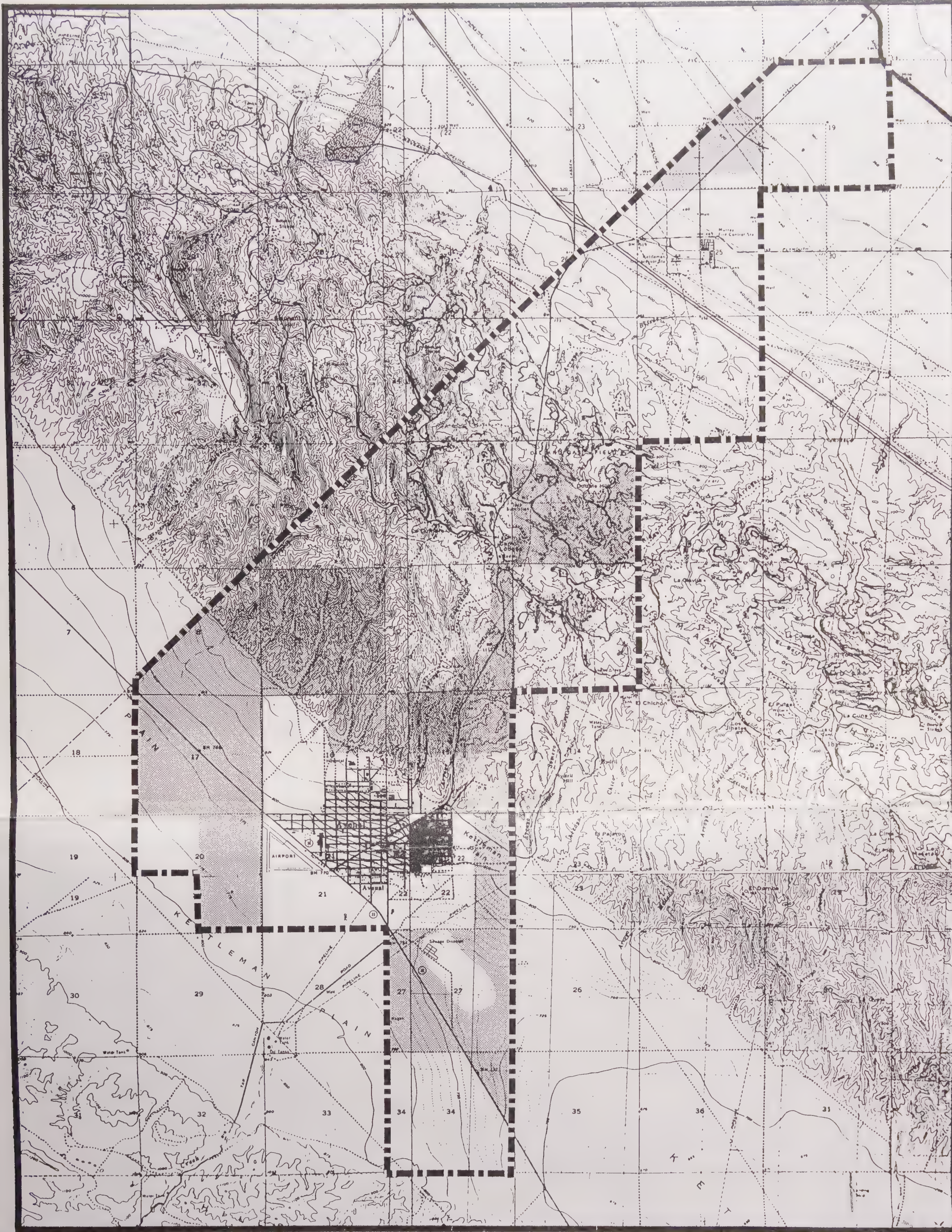
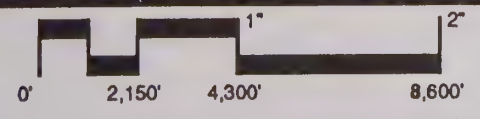


EXHIBIT 7

AVENAL GENERAL PLAN



**COLLINS & ASSOCIATES
PLANNING CONSULTANTS**

AGRICULTURAL PRESERVES



PARCELS WHICH HAVE ENTERED INTO AN
AGRICULTURAL PRESERVATION CONTRACT



Avenal-Panoche soils, located on the Kettleman Plain. The soils in the Kettleman Hills are derived from sandstone and shale and are associated with moderate to steep slopes. Soils on the Kettleman Plain are associated with alluvial fans. They are very deep, nearly level and are well drained. Conservation of soils is an important aspect of maintaining the development potential of certain areas as well as maintaining viable agricultural lands.

The Kings County Soil Survey identifies five specific soils in the Avenal city limits. They are Panoche loam, Kettleman loam, Cantua course sandy loam and Wasco sandy loam, located on the Kettleman Plain and San Joaquin Valley floor, and the Kettleman-Cantua complex, located in the Kettleman Hills (see Exhibit No. 8).

Panoche loam is a very deep soil that is well drained and is located on alluvial fans. This soil is suited for urban development as well as agriculture - it has a Class 1 agricultural rating (Class 1 soils have the fewest limitations for agriculture; Class VIII have the most limitations for agriculture) and a Storie Index rating of 100 (A Storie Index rating of 80-100 has the greatest suitability for general intensive agriculture; less than 10 has the least suitability for general intensive agriculture).

Kettleman loam is a moderately deep soil that is well drained and is located on the edges of Kettleman Hills. Runoff from this soil is rapid and hazard of erosion is high. This soil is best suited for rangeland. It has a Class VI agricultural rating and a Storie Index of 63. Limitations for urban development are steepness of slope, moderate depth to bedrock, and hazard of erosion.

Cantua course sandy loam is a deep soil that is somewhat excessively drained. This soil is best suited for rangeland. It has a Class IV agricultural rating and a Storie Index of 73. This soil is poorly suited for urban development, limitations include steepness of slope, shallow depth to soft bedrock, hazard of erosion, and moderately rapid permeability.

Wasco loam is a very deep soil located on alluvial fans. This soil is well suited for agriculture. It has a Class II agricultural rating and a Storie Index of 81. The main limitation to developing on this soil is its moderately slow permeability, which can cause septic tank adsorption fields to fail.

In the mountainous parts of the planning area, erodibility is a critical soil characteristic. Erosion factor "K" is a constant used in soil loss equations to predict sheet and rill erosion by water. K factor values range from 0.02 to 0.69 with the higher values representing greater susceptibility to erosion. Erosion Factor "T" represents the amount of soil (in tons per acre) that can be eroded by wind and water without affecting soil productivity over a sustained period. Wind erodibility groups indicate the susceptibility to wind erosion and the amount of soil lost. The groups are numbered 1-8 with the highest number being the least erodible. The physical characteristics of soils in the planning area are described in Table No. 7.

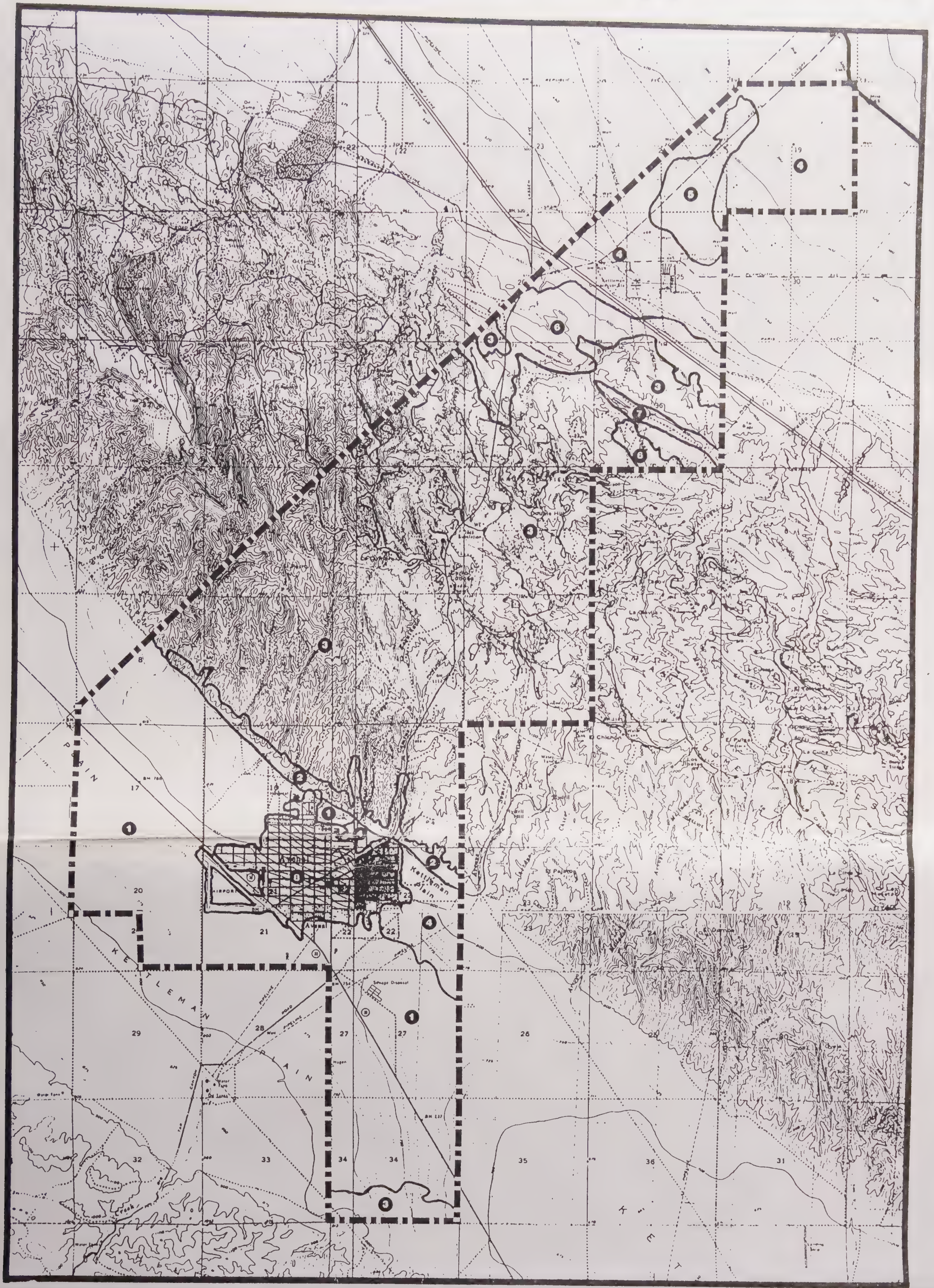
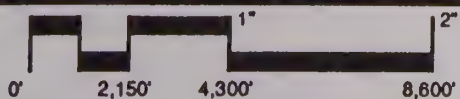


EXHIBIT 8

AVENAL GENERAL PLAN



**COLLINS & ASSOCIATES
PLANNING CONSULTANTS**

SOILS

- | | |
|----------------------------|--|
| 1 Panoche Loam | 5 Milham Sandy Loam |
| 2 Kettleman Loam | 6 Cantua Course Sandy Loam
(slopes of 5 - 15%) |
| 3 Kettleman-Cantua Complex | 7 Cantua Course Sandy Loam
(slopes of 15 - 30%) |
| 4 Wasco Sandy Loam | 8 Urban Land |



Conservation of soil resources in the planning area is critical in maintaining the agricultural resources and development potential of differing soils.

Table No. 7
Physical Properties of Soils

Soil Type	Permeability	Available	Shrink/Swell	Erosion Factor		Wind Erodi- bility Group
	in/hr	H2O Capacity in/in	Potential	K	T	
Kettleman	.06-2.0	.14-.16	low-mod.	0.37	3	6
Cantua	2.0-6.0	.09-.12	low	0.43	2	5
Panoche loam	.06-2.0	.14-.18	low-mod.	0.43	5	6
Wasco sandy loam	2.0-6.0	.08-.13	low	0.32	5	5
Kettleman loam	.06-2.0	.14-.18	low-mod.	0.37	2	6
Cantua course sandy loam	2.0-6.0	.09-.12	low	0.43	3	5

Source: USGS, Soil Conservation Service

Biotic Resources

Natural Communities

Associations of plant species that grow in assemblages under similar ecological conditions are called communities. Generally, they are named for the dominant species found in the association. Definition of natural communities is important, not only because it identifies the types of plants that are present, but also because it indicates the habitat types and animal species that may be found in the community. Two natural communities were found within the Avenal city limits: Non-native Grassland and Interior Coast Range Saltbush Scrub. The community descriptions listed below follow Holland's 1986 report for the California Department of Fish and Game (CDFG) and the State's Natural Diversity Data Base.

Non-native Grassland - This community is found throughout California, primarily below an elevation of 3,000 feet. Non-native grassland is dominated by exotic (non-native) annual grasses in association with many species of native wildflowers. Characteristic species include; red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum leporinum*), filaree (*Erodium* spp.), fiddleneck (*Amsinckia* spp.), tarweed (*Hemizonia* spp.), peppergrass (*Lepidium* spp.) and lupine (*Lupinus* spp.).

Interior Coast Range Saltbush Scrub - This natural community is found only along the inner south Coast Ranges of California up to an elevation of approximately 2,000 feet. This community occurs in areas that are not affected by tule fog in the winter months. Interior Coast Range Saltbush Scrub is characterized by a moderate to dense cover of Allscale (*Atriplex polycarpa*) and other saltbush species (*Atriplex*



spp.), California snakeweed (*Gutierrezia californica*), Locoweed (*Astragalus* spp.), and San Joaquin goldenbush (*Haplopappus acradenius bracteosus*). An understory of annual grasses (primarily bromes) is often found in this community.

Holland felt that the Interior Coast Range Saltbush Scrub is rare enough to merit inclusion in the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California*, due to its limited range and conversion to non-native grassland caused by year-round grazing. An example of this conversion is evident in the grazed portions of the saltbush community just north of the urbanized portion of Avenal, where approximately 30 percent of the community consists of dead saltbush plants.

Rare, Threatened, and Endangered Species

Seven animals of special status and five harvest species (animals that are hunted in California) are known to occur in the city limits. These animals are regulated by the U.S. Fish and Wildlife Service and the California Department of Fish and Game (CDFG) to insure that their populations remain viable. San Joaquin kit fox and blunt-nosed leopard lizard are the most seriously threatened animals found within the city limits and are discussed below. The California Natural Diversity Data Base (CNDDDB), maintained by the California Department of Fish and Game, shows that Avenal is within the range of the following sensitive species.

- Giant Kangaroo rat (*Dipodomys ingens*)
- Short-nosed kangaroo rat (*Dipodomys nitratooides brevinasus*)
- Blunt-nosed leopard lizard (*Gambelia silus*)
- San Joaquin kit fox (*Vulpes macrotis mutica*)
- San Joaquin antelope squirrel (*Ammospermophilus nelsoni*)
- California jewel flower (*Caulanthus californicus*)
- San Joaquin wooly threads (*Lembertia congdonii*)

CDFG Species of Special Concern are those species with limited range in California and whose future status is unknown. Species of Special Concern that have been observed within the city limits are the American badger, golden eagle, prairie falcon, burrowing owl, and LeConte's thrasher.

Four of the five harvest species observed in Avenal are game animals regulated by the CDFG. These include the black-tailed jackrabbit, desert cottontail, mourning



dove and California quail. The fifth harvest species is the bobcat, a non-game animal whose hunting is strictly regulated by the CDFG.

San Joaquin Kit Fox - The kit fox is endemic to central California and was once common in the southern San Joaquin Valley. Their population has declined dramatically due to habitat loss caused by urbanization and cultivation of their native habitat. The kit fox is listed as "threatened" by the State of California and "endangered" by the Federal government.

The San Joaquin kit fox is a burrow dweller and is known to occur in both of the natural communities found within the planning area. It is an opportunistic feeder, eating whatever prey species are locally abundant. Prey can include insects, birds, rodents and other small mammals.

Blunt-nosed Leopard Lizard - This lizard is a relatively large iguanid that inhabits sandy washes and open flat areas. It primarily feeds on insects, but has been known to eat small lizards and, rarely, plant material. The leopard lizard is also endemic to central California and has suffered from habitat loss pressures similar to those affecting the kit fox. It is listed as endangered by both the State of California and the Federal government.

Biotic Surveys

In addition to the biotic survey completed by Hansen Biological Consulting for the Avenal General Plan, three previous biotic surveys were conducted on lands within the planning area. Hansen's Biological Consulting prepared a survey in 1989 for Avenal's Off-Road Vehicle Park, located north of the urbanized portion of Avenal; CH2M Hill conducted a survey for Western Drum in 1991 on land located east of State Route 33 and south of the urbanized portion of Avenal (near Avenal's old sewage treatment plant); and the State Department of Corrections conducted a survey in 1983 on land where the Avenal State Prison currently resides.

The Hansen Survey recorded five sightings of kit fox in 1989. Transect surveys during daylight hours resulted in observations of six known kit fox dens, one den complex with at least two entrances, and 121 potential kit fox dens. Kit fox tracks and scat were also observed during the transect surveys. The CH2M Hill Survey did not indicate the presence of kit fox in the survey area; however, fox scat and small canid bones were found along the northern boundary line of Section 27, Township 22 South, Range 17 East. The survey conducted by the Department of Corrections did not reveal any signs nor sightings of kit fox in the survey area.

The 1989 Hansen Survey identified a number of washes that were suitable as leopard lizard habitat. At least two leopard lizards were observed in the survey area and several leopard lizard scats were found near the sightings. The CH2M Hill Survey did not find any evidence of leopard lizards. The survey did identify some land that could serve as habitat for this species near the northeast corner of Section



27. The survey conducted by the Department of Corrections did not reveal any signs nor sightings of leopard lizards in the survey area.

The 1989 Hansen Survey makes reference to hearing the call of the San Joaquin antelope squirrel; however, visual verification was not made. Neither the CH2M Hill nor Department of Correction surveys observed this species or uncovered evidence of its existence. None of the surveys observed the Giant kangaroo rat, Short-nosed kangaroo rat, the California jewel flower, or San Joaquin wooly threads.

The 1992 Hansen Survey discovered potential kit fox dens and sighted a leopard lizard within the survey area, which included lands north of Hydril Road including the landfill site and the northern half of Section 16, north of the Avenal District Hospital. No other rare or endangered species were sighted within this survey area. The Consultant has recommended that plant surveys be conducted during the Spring months to confirm the absences of the California Jewel Flower and San Joaquin Wooly Threads.



Conservation, Open Space, Park and Recreation Resources

The City of Avenal currently has two designated park sites totaling approximately 8.96 acres. Rice Park is a 4.79 acre site located at the intersection of Park Avenue and Monterey Street. Rice Park is considered a neighborhood park. According to the National Parks and Recreation Service, a four acre park would be categorized as a neighborhood park, which has a service area of approximately 1/4 to 1/2 mile radius. Facilities at Rice park include: passive recreation area, playground equipment, barbecues, 20 picnic tables, restrooms, and a community building with kitchen facilities.

Avenal's second park is the proposed Oasis Park, which is currently unimproved and contains 4.17 acres. This site was purchased with 1987 State Park funds. Although the Park is not currently improved, the City's plans are for a passive park. Besides these two park sites, other entities which provide open space and park amenities include schools, the horse corrals, the gun club, surrounding agricultural lands, and the open hillsides which border the City. Exhibit No. 9 provides the locations of existing open space, parks and recreation facilities within the City, not all of which are City owned and operated.

In addition to maintaining and operating park facilities, the City's Parks and Recreation Department supervises and coordinates a wide variety of programs and activities. Examples include:

Community Events. The Department helps sponsor family-oriented and special community events throughout the year, including the Old Timers Day held in May and the Fourth of July activities.

Sports Programs. The City provides organized men's and women's sports leagues and youth sports leagues as well as an aquatics program. A strong emphasis has been placed on community participation in the planning, organization, and implementation of these programs. As these programs grow and participation increases, additional fields and facilities will be needed. Existing facilities will need renovations and there will be an increasing demand for additional staffing.

The last two years have seen a steady increase in citizen participation in the sports leagues. This has been accomplished with the addition of new programs and increasing attendance in existing programs. For instance, open swimming at the high school pool began in 1991. That year, a total of 3500 persons made use of the pool. A dance class has been offered for the last three years. In 1990, 25 persons attended the class. Attendance increased to 42 and 50 persons in 1991 and 1992.

Two other programs that have been quite successful in Avenal are the senior citizen group and little league baseball. Both groups are operated independently of the City



Recreation Department and run by private citizens. Below is a brief description of each program:

Senior Programs. Recreational, educational, and nutritional programs are provided for the senior population. The seniors meet at the Veteran's Hall located on Kings Street. The Hall is open from 9:00 am to 1:00 pm daily. Pool tables, shuffle board and sewing classes are some of the activities available. In addition, the seniors make occasional trips and outings.

A nutritional program is also provided. Daily lunches are served at a cost of \$1.00. According to the Parks and Recreation Director, these lunches are attended by an average of 45-50 persons per day.

Little League. Avenal Little League is run by private citizens of Avenal. This group enjoys a large annual participation. They are currently using the fields north of Rice Park. The ball fields are owned by the Reef Sunset Unified School District.

Joint Use of School Facilities

In addition to City-owned park and recreation facilities, Avenal residents have access to grounds and playing fields at Reef Sunset Unified School District (RSUSD) schools. Table No. 8 summarizes the sports facilities on school grounds. RSUSD and the City have established an outstanding cooperative relationship encouraging maximum use of public property, facilities, and equipment for the community. Currently the two agencies have a verbal agreement for use of facilities; however, as the City and schools experience continued growth, a more formal joint use agreement would be appropriate.

TABLE No. 8
Existing School Recreation Facilities

<u>School</u>	<u>Acres</u>	<u>Recreation Facilities</u>
Avenal Elementary School	10.5 ac	football field, 1 baseball field, volleyball and basketball courts, 1 dirt track, assorted playground equipment
Reef Sunset Middle School	18 ac	volleyball and basketball courts, assorted playground equipment
Avenal High School	38 ac	50 meter swimming pool, football stadium, 1 baseball field, 1 softball field, gymnasium, 3 tennis courts, 1 dirt track, 2 auditoriums

Source: Reef Sunset School District, 1992



Other Area Open Space and Recreation Facilities.

Avenal Gun Club: The Avenal Gun Club is located on the south end of Corcoran Street. This is also the meeting place of the Avenal Hunting Club.

Veterans Memorial Building: The Veterans Memorial building is located on Kings Street between First Avenue and State Highway 33. This building is not only used by the Veterans, but is also used on a daily basis by the Senior Citizens group.

Horse Corrals: The horse corrals are located north of Avenal Hospital in the foothills. The property is leased from Standard Oil. The corrals and stables have been in operation for approximately 50 years. The foothill area also provides an excellent trail system.

Fishing on the California Aqueduct

The California Aqueduct provides water for the City of Avenal. The aqueduct runs along the northern boundary of the city limits. Fishing along the banks of the aqueduct is another recreational opportunity for the community that many enjoy.

Regional Parks Facilities

There are several regional parks that are within driving distance to Avenal. Generally speaking, at a maximum, most people will be willing to travel 30 minutes to get to a regional park facility, and possibly one hour if there was some type of event scheduled there such as a church gathering, family reunion, or school function. According to the Kings County Parks Department there are several parks that are currently visited by persons from Avenal. The park most used by citizens of Avenal is Hickey Park located at Flint and Seventeenth Avenues near Hanford. Hickey park is a 47-acre park site mainly used for picnicking. Other activities include: volleyball, baseball, horseshoes, and playground equipment. The park is located approximately 30 minutes from Avenal. Another regional park facility accessible from Avenal is Burrus Park. This facility is approximately one hour from Avenal and contains 57 acres. Burrus Park not only has all of the typical park facilities, but also contains a historical museum which has recently been renovated. Kingston Park would be the only other Kings County regional park facility that would be less than one hour drive from Avenal. It is a 26-acre park located adjacent to the Kings River near Laton.

The Polvadero Golf Course is located between Avenal and Coalinga on Jayne Avenue. The golf course is privately owned, but is operated by the City of Coalinga, the City of Avenal and the Coalinga-Huron Parks and Recreation District. At one time, a Joint Powers Agreement between the three entities was to be formalized; however, this has never materialized. The golf course is an 80-acre site. It accommodates a full size 9-hole course and a small pro shop. Approximately 3,500 rounds of golf were played last year. Maintenance of the course is done by several



volunteers and a work crew from the Avenal State Prison.

Fresno County Parks Department also has regional parks facilities in the area. Los Gatos Creek Park is located only 25 minutes from Avenal and is mainly used for picnicking. In addition, the City of Coalinga's parks facilities are located within 15 minutes drive from Avenal are used quite often by persons from Avenal. Exhibit No. 10 provides general location of regional parks facilities.

Conservation, Open Space, Parks and Recreation: Future Needs

A primary objective of this Element is the establishment of criteria that will guide the acquisition and development of future open space areas. These standards should be realistic and represent the actual amount of area and facilities necessary to meet the needs and desires of the community. These open spaces can be provided in a variety of ways, and do not need to be under the control of the City to meet Avenal's needs.

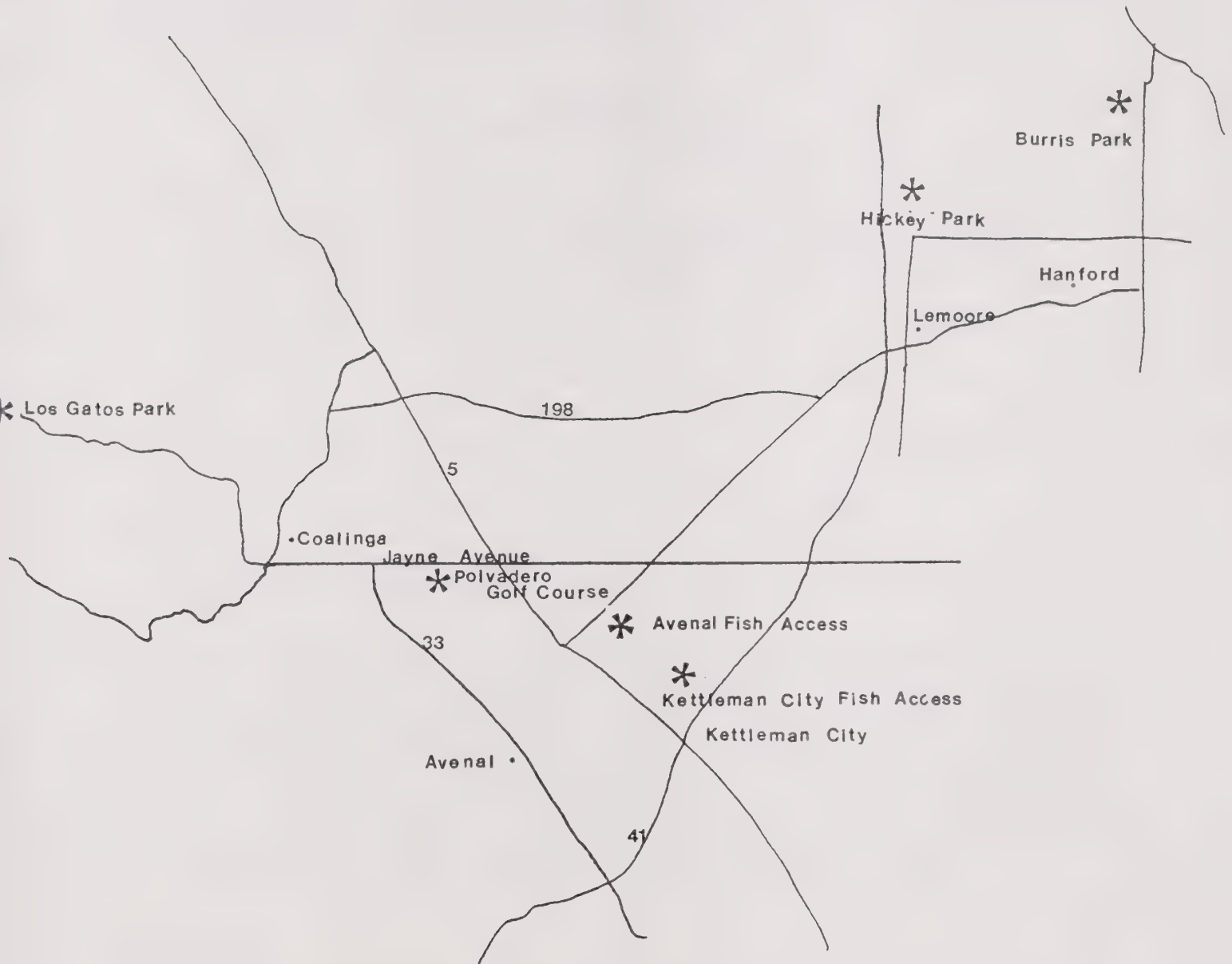
State Government Code Section 66477 (b) requires a minimum of three acres of open space for every one thousand residents. Each jurisdiction can require that a maximum of five acres of open space per one thousand residents if the current land use exceeds the three acres per thousand. Presently, Avenal has a total of 8.96 acres of city-owned parks and recreation facilities. With an estimated 1992 non-prison population of 5763 persons, Avenal has approximately 1.55 acres of open space per one thousand residents. The City would need to have a total of 17.3 acres of land devoted to conservation, open space, parks and recreation areas.

Projections of a community's open space and park needs involves many factors. Population, income, education, accessibility, and age must all be considered in determining the correct amount of open space/parks for a community. In this case, more is not necessarily better. Parks must strike a balance between use and the maintenance required to sustain the park. Generally speaking, city parks cost approximately \$3500 to \$4,000/acre per year to maintain. A city may have 10 acres of open space per 1,000 persons; however, if this acreage is not maintained properly, its value as usable open space will be greatly diminished. Avenal currently does not have sufficient open space lands to meet the needs of the community. As the City acquires more parkland, it must also dedicate the resources to adequately maintain it.

Americans today are spending more of their time today in recreation leisure activities than ever before. This emphasis has created a much higher demand than ever for open space, parks and recreation facilities. In response to this, city's must designate areas for such uses, before development occurs.

EXHIBIT 10

REGIONAL PARKS FACILITIES





Parkland

In order to determine the type, location and amount of parkland that will be required by Avenal within the 20-year planning period, population projections are required. Three non-prison population projections - low, medium and high- for the year 2010 are displayed in Table No. 9. As population increases so does the need for facilities and programs. Table No. 9 also provides the required number of acres of open space for each of the projections listed.

**TABLE 9
PROJECTED PARK NEEDS**

Year	2.0% (AAGR)*	Required acres of OS	2.8% (AAGR)	Required acres of OS	3.5% (AAGR)	Required acres of OS
1990	5455	16.37 ac	5455	16.37 ac	5455	16.37 ac
1992	5675	17.03 ac	5765	17.30 ac	5843	17.53 ac
2000	6647	19.94 ac	7187	21.56 ac	7692	23.08 ac
2010	8106	40.50 ac	9477	47.40 ac	10854	54.30 ac

*Average Annual Growth Rate

Source: Collins & Associates, 1992

The ability to forecast population growth allows for the planned acquisition and development of park sites. As stated above, State standards require a minimum of three acres per one thousand residents. With only 8.96 acres of city-owned open space, Avenal currently falls short of its existing open space need by 8.34 acres. For purposes of this document, only city-owned open space will be counted towards meeting the three acres per thousand residents open space requirement. Improvements and facilities must be planned, developed, and maintained to ensure adequate recreational facilities for existing and future residents.

Accessibility

Another important factor in the planning of future parks, is to insure that parks are accessible to all citizens of a community. For instance, although a city may currently meet the standards regarding the amount of parkland required; the existing park sites may not be easily accessible from all areas of the community. The issue of accessibility will be discussed later in this document.



Exhibit No. 11 shows the location of existing, improved city-owned and school district-owned park facilities and their service areas. Service area dimensions are provided by the National Parks and Recreation Association. Generally a community park will have a one-half mile service area, and a neighborhood park has a one-quarter mile radius service area. Exhibit No. 11 indicates that there is a lack of park facilities in the southern portion of the City, south of Skyline Blvd. Recently, the City purchased a 4-acre future park site in this part of the community, located on the corner of Seventh Avenue and Laneva Blvd. This site is designated for a passive park facility; however, at this time the site is an unimproved vacant lot. Development of this site could improve park accessibility to the southern portion of the community, but will not completely resolve the lack of open space accessible to the residents in this area.

THE PLAN

This portion of the Element incorporates the goals and policies into implementing action programs. These goals and policies are a guide to the future development of parks and recreation facilities as well as the preservation of Avenal's natural resources.

The first part of the Plan is the identification of issues relating to conservation, open space, parks and recreation facilities. The second part is the identification of policies that will guide future decisions regarding these issues. The third part of the Plan is the action program. These programs will serve to implement the policies. For example, the action program will provide a framework for the development of future capital improvement programs and department budgets.

GOALS, OBJECTIVES, AND ACTION PROGRAM

The following goals have been used as a guideline in the preparation of this Element:

1. *Conserve, restore, and enhance significant natural, cultural and historic resources in Avenal.*
2. *Create and preserve open space in the Avenal area to meet the needs of the community now and in the future.*
3. *Develop a high quality public park and recreation system that is convenient, accessible and affordable to all segments of the City.*
4. *Implement the Conservation, Open Space and Recreation Element through a combination of public and private funds, regulatory processes, and innovative strategies.*



5. *Preserve the existing scenic qualities of the community by adopting standards regulating entryways, view preservation and landscaping.*

AIR QUALITY

Issues

The City of Avenal exceeds two important pollutant criteria - ozone and particulate matter. As growth occurs, more smog is produced by fossil fuel burning and emissions from factories. The City must encourage development that will minimize vehicular emissions by providing an adequate circulation system.

Policies and Action Programs

1. Participate in the regional planning efforts to meet air quality goals by working to improve air quality for the entire planning area.

Action - The planning and public works departments will send proposed development plans to the Kings County Air Pollution Control Board for review of potential air pollution impacts.

2. Consider traffic flow in the planning of residential commercial, and industrial developments.

Action - The planning and public works departments will review all new projects to insure that traffic flow is not unnecessarily impeded, thereby causing increased vehicle-related air emissions.

3. Maintain adequate roadway levels of service (LOS) to avoid congestion which contributes to the air pollution problem.

Action - The public works department will review all proposed development projects to insure that roadway service levels do not fall below Level C for arterials and collectors and Level B for local roadways. The department will utilize gas tax and transportation funds to maintain these transportation standards.

4. Develop an organized and efficient circulation system to reduce vehicle trips in the planning area, idling time, intersection delays, and other emissions-producing activities.



Action - The City shall review all new projects for consistency with the adopted Circulation Element.

WATER QUALITY AND CONSERVATION

Issues

The City of Avenal receives its water from the California Aqueduct. As the drought in this area continues, the State of California continues to decrease allocations to its users. The City of Avenal must provide for long-range community water needs and protect water quality and quantity. It must also maximize the use and conservation of the community's water resources.

Policies and Action Programs

1. Promote a community awareness program that will educate the community in water-saving methodologies at the home and the work place.

Action - The public works department must provide the community with information brochures containing water-saving techniques. Further, the department should prepare a Water Conservation Ordinance for adoption by the City Council.

2. Require the use of drought-tolerant trees, shrubs, and groundcovers in existing and future parks.

Action - The City's Water Conservation Ordinance shall require the use of drought-tolerant species.

3. Allow for adequate groundwater recharge by developing storm ponding and retention basins where feasible. In some areas these ponds or basins can be incorporated into a recreational area or used as wildlife habitat area.

Action - The planning department shall implement the policies of this Element with regard to locations of future park/pond basins.

4. Identify potential areas where hazardous waste may impact groundwater quality and closely monitor these areas.

Action - The Kings County Health Department, in conjunction with the City of Avenal, will identify potential impacts between hazardous waste sites and groundwater during the review of all new projects.



HISTORICAL RESOURCES

Issues

Although the City of Avenal does not have any structures designated as "historic" by the Kings County Historical Society, there are some architecturally significant structures that enhance Avenal's identity. The City should preserve and rehabilitate these structures. Along Kings Street, many structures have an Art Deco architectural style. The best example is the old movie theater. The schools also exemplify significant architectural styles in the City. Avenal High School, with its Spanish architecture, is a prominent feature in the community. The new Reef Sunset Middle School located on First Avenue also makes its own architectural statement with its ultra-modern design.

Policies and Action Programs

1. Work with developers and architects in creating new buildings and renovating old buildings in a manner that is sensitive to existing architecturally significant buildings.

Action - The planning department shall identify architecturally significant structures that are important to the identity of Avenal.

2. Preserve and enhance historical structures through the Redevelopment program and cooperation with the Kings County Historical Society.

Action - The planning department shall review new buildings and additions and insure that they do not detract from character of the City.

OPEN SPACE RESOURCES

Issues

The City of Avenal has significant natural resources that must be preserved. These natural resources include: agricultural lands, mineral resources, habitat areas for rare and endangered species, and outdoor recreation areas. As the City grows, increased pressure to develop these areas may result in conflicts which may result in the elimination of these resources. The City will designate some of these areas as Open Space, so that these precious resources can be conserved.

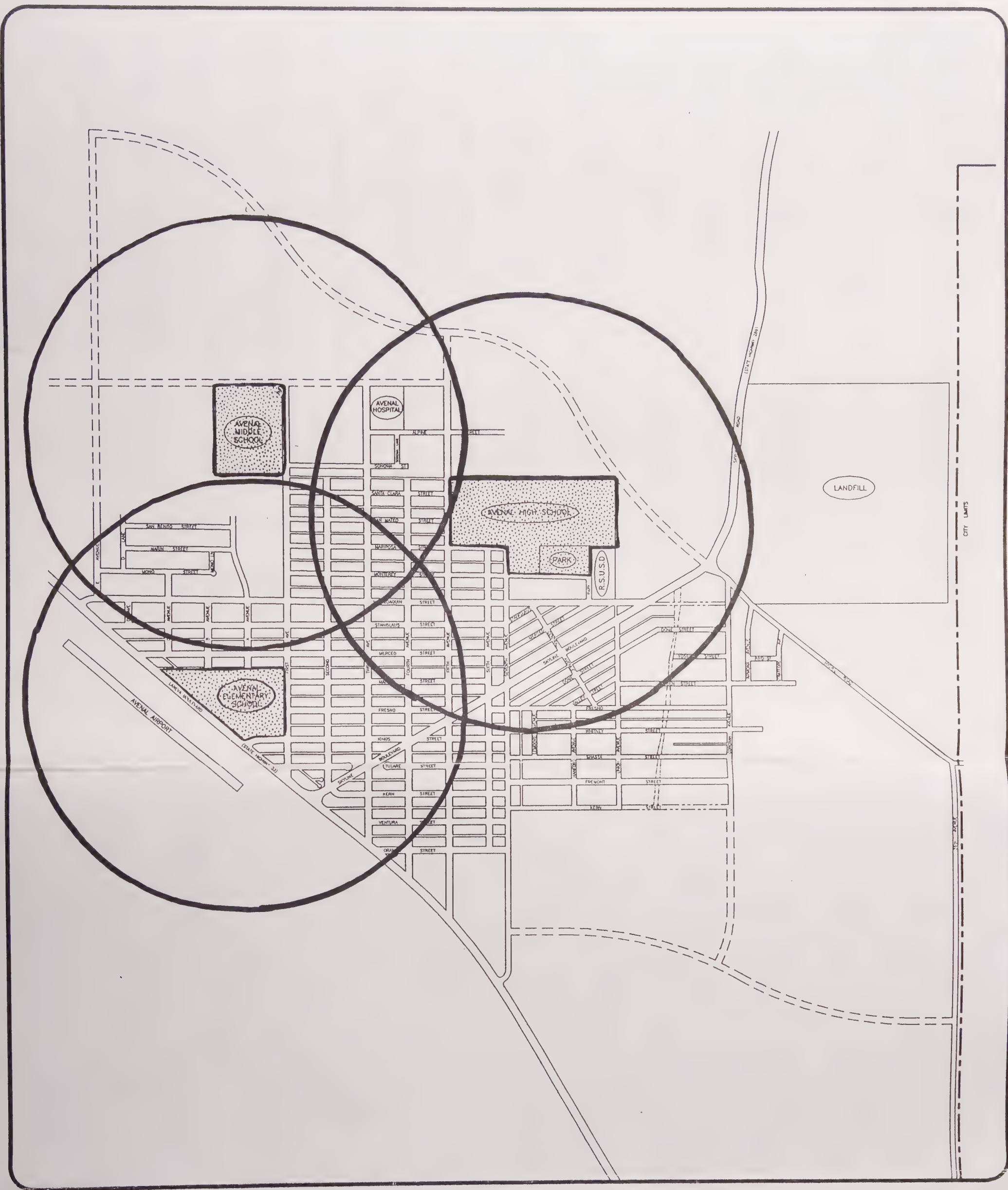


EXHIBIT 11

AVENAL GENERAL PLAN



0' 950' 1,900' 3,800'

COLLINS & ASSOCIATES
PLANNING CONSULTANTS

EXISTING CITY PARKS, SCHOOLS AND THEIR SERVICE AREAS



Policies and Action Programs

1. Provide in open space resources, lands for the preservation of natural resources and for outdoor recreation.

Action - This Element has designated a Nature Preserve area on the west side of Skyline Blvd, just north of the urbanized portion of the City. Purchase of this Preserve should come from mitigation impact fees from development and state and federal grants.

2. Preserve and protect agricultural lands as a means for providing open space and for the managed production of resources.

Action - Areas of non-prime agricultural soils should be designated for residential and commercial development.

Action - The Planning Department shall conduct an annual review of canceled Williamson Act contracts and development proposals on agricultural land within the City Limits and Sphere of Influence.

3. Provide buffers and transition areas between urban uses and agricultural land to reduce incompatibility issues that are associated with cultivation, pest control and harvesting of crops.

Action - Adoption of the Land Use Element will provide the implementation of this policy.

4. To protect intensive and extensive agricultural operations in Avenal the minimum parcel sizes for these types of operations shall be 40 and 160 acres, respectively.

Action - Adoption of the Land Use Element will provide the implementation of this policy.

5. Encourage owners of agricultural parcels that are not within the 20- year growth pattern of Avenal's Land Use Element to enter the agricultural preserve program.

Action - Adoption of the Land Use Element will provide the implementation of this policy.

6. Increase overall residential densities in the City of Avenal so as to require less urbanization of surrounding agricultural lands.

Action - Adoption of the Land Use Element will provide the implementation of this policy.



7. Limit development of sensitive or constrained lands i.e. hillsides, floodplain, and steep slopes..

Action - Adoption of the Land Use Element will provide the implementation of this policy.

8. Establish and maintain "hard edges" around Avenal that defines where urbanization stops and agricultural open space begins.

Action - Adoption of the Land Use Element will provide the implementation of this policy.

9. Preserve the Arroyo del Camino Waterway.

Action - Adoption of this Element and its policies will provide implementation of this item.

DESIGNATION OF ADEQUATE FACILITIES

Issues

The City's General Plan must designate adequate facilities for future development. The Land Use Element and this Element must provide locations for the future development of conservation, open space, parks and recreation facilities. If adequate sites are not designated in advance, the City will continue to grow with no property set aside for these uses.

Policies and Action Programs

1. Maintain compliance with adopted City park standards now, and as the City grows.

Action - The planning department shall review all new projects to insure that designated open space areas remain as open space.

2. Acquire and develop adequate park sites to serve future City growth.

Action - The City shall use park development impact fees towards acquiring and developing new park sites.

3. Provide a variety of park sites and recreational facilities to accommodate the City's diverse population.



Action - Adoption of this Element will provide implementation of this item.

4. Acquire park sites in the northwest and southeast parts of Avenal.

Action - Adoption of this Element will provide implementation of this item.

5. Plan for the acquisition of parks prior to urban growth and development. These lands may be acquired and left vacant until funding for development is available.

Action - Adoption of this Element will provide implementation of this item.

6. Encourage private or commercial development of recreational opportunities such as racquetball courts, golf, commercial softball, etc., that are available to the public.

Action - The City will encourage the development of private recreation facilities.

7. Encourage joint public-private development and use of recreational facilities.

The parks and recreation department shall review the possibility of using private recreation facilities (e.g. horse corrals, gun club) for City programs.

8. Work with Kings County in the acquisition of regional park facilities.

Action - The City will contact Kings County Planning Department to assist in the designation of future regional open space, parks and recreation facilities.

9. Add 38.44 acres of conservation, open space and parks and recreation area by the year 2010.

Action - Adoption of this Element will provide implementation of this item.

10. Develop an "adopt a park" program throughout the City.

Action - The parks and recreation department shall implement an "adopt a park" program in which private citizens or organizations (i.e. service clubs, churches, girl scouts) help with the maintenance of open space, parks, and recreation facilities.

11. Encourage donations of land and/or money towards the acquisition, development or maintenance of parks and recreational facilities.



Action - The City shall seek out donations of land or money towards park facilities.

12. Coordinate efforts to acquire and develop park and recreational facilities with the Reef Sunset Unified School District to insure that there is no duplication of facilities or programs.

Action - The City of Avenal shall enter into a Joint Use Agreement for recreational facilities with the Reef Sunset Unified School District.

PARK LOCATION AND DESIGN

Issues

The City of Avenal currently does not have an adequate distribution of park and open space facilities throughout the City. Active park sites and passive open space areas should be accessible to all segments of the community. Currently there are no improved park sites in the southern portion of the community.

Policies and Action Programs

1. Design park sites that fulfill the open space, passive and active recreational needs of all the citizens of Avenal.

Action - The Planning and Public Works Departments shall assist in the design plans of all future parks.

2. Locate future parks in such a way as to be accessible and available to all the citizens of Avenal.

Action - Adoption of this Element and its policies will provide implementation of this policy.

3. Locate park and recreational facilities so that they do not conflict with adjacent land uses.

Action - Adoption of this Element and its policies will provide implementation of this policy.

4. Consider the detention or retention of urban storm water runoff in the design of future parks.



Action - The Public Works Department shall review future park sites for potential park/pond facilities.

5. When possible, locate community parks on arterial roadways and neighborhood parks on collector streets to ensure adequate access for the community.

Action - Adoption of this Element will provide implementation of this policy.

6. All parks should be designed to meet the needs of the handicapped.

Action - The Building Department shall review all proposed facilities plans for compliance with the Uniform Building Code.

7. Parks and other facilities that may require a significant amount of lighting i.e. ball parks and tennis courts, should be designed in such a way as to minimize the impacts to the surrounding neighborhood.

Action - The Planning Department shall review all projects for compliance with CEQA.

8. Fencing and landscaped buffers shall be used to minimize any negative impacts a park may have on an adjacent residential neighborhoods.

Action - The Planning Department will review all park plans to insure that any negative impacts to surrounding properties are minimized.

9. Parks that incorporate storm water detention or retention basins should consider design aspects that involve safety, aesthetics, and utility.

Action - The city engineering department review future park sites for potential park/pond facilities in relative to the City's storm drainage master plan.

10. Parks shall provide bermed landscaped areas to reflect the natural setting of the hillsides surrounding the City as well as provide some relief to the non-sloping areas within the urbanized portion of the City.

Action - City staff shall review the grading plans of all park sites to insure that areas of bermed landscaping are provided.



11. Parking areas shall be landscaped to provide a park-like appearance.

Action - The Planning Department shall establish landscaping standards for parking areas.

PARK ACQUISITION AND FUNDING

Issues

Adequate funds are the major obstacle in developing and operating park and recreation facilities. With the competition for state and federal dollars, there is a need to find new and expanded sources of funds for development. Cities must work to develop more effective finance mechanisms to meet the growing needs of the community. The City of Avenal currently does not charge a park facility fee as allowed by the Quimby Act. This is generally one of the main sources of City funding for parks and open space facilities; therefore, this Element is recommending the implementation of the Quimby Act as an action program item. Other financing mechanisms include: 1) Proposition 70 monies, 2) Redevelopment tax increment funds, and 3) Landscaping and Lighting Act of 1972 allows the creation of assessment districts.

Passage of Proposition 70, along with earlier park bond propositions, has made monies available for the construction of park, educational and recreation facilities, and acquisition of lands for parks, nature preserves and open space. Some of these funds will automatically accrue to the City of Avenal while other funds are awarded through a competitive selection process.

Redevelopment Law allows cities to utilize tax increment revenue to finance land acquisition for public purposes; construction of public facilities, such as parks, sewers and streets; and administration.

Should the Avenal City Council, who also serves as the Redevelopment Agency, wish to construct major park and recreation improvements, tax allocation bonds could be issued. These tax allocation bonds would provide the City with money to finance projects in the Redevelopment District. The debt on the bonds would be serviced by tax increment revenue generated in years following the issuance.

The Landscaping and Lighting Act of 1972 can be used to finance the construction of landscaping, lighting and park and recreational improvements, and the maintenance and servicing of any of these improvements. The Act provides for the creation of a district which can be broken down into zones. A zone can be exempted from the district or assessed differently based on the level of benefit to properties within the zone. This financing mechanism is an excellent means of maintaining and servicing the common open space and recreation improvements in each residential development. Another option would be to consider forming a



maintenance district which encompasses the entire community; however, the funds generated would only apply to the the maintenance of public improvements as specified by the City.

Policies and Action Programs

- ① The City shall require developers to pay park impact fees (Quimby fees) or dedicate land in lieu thereof. The State of California adopted Section 11546 of the Business and Professional Code which allows a jurisdiction to require the dedication of parkland by a subdivider, or in lieu of dedication, to pay a fee of equivalent value.

Action - The City shall amend the current fee schedule as adopted by City Council Resolution 91-35 to include a park fee.

✓ Action - The City of Avenal should annually review its fees for recreational programs, park lands (Quimby fees), and rentals to insure that they are sufficient to finance future park needs.

- ② Ensure that the City of Avenal receives its full share of federal and state grant funds including matching and competitive grants. The City shall also seek out available charitable contributions for parks and open space facilities.

Action - The City shall make application for available federal and state grants as they come available.

Action - Avenal should explore securing gifts from foundations and individuals to support special interest recreation programs or park projects.

- ③ Avenal should explore the financing of park and recreational facilities through the use of tax-increment funds, generated by the sale of tax-allocation bonds.

Action - The City shall do a feasibility study of financing park and recreation facilities by the sale of tax-allocation bonds.

4. Avenal should continue to explore the opportunities to enter into joint powers agreement with other agencies to share the cost of park and recreation facilities development and maintenance.

Action - The City shall contact the Reef Sunset Unified School District and Kings County Planning Department to discuss a joint powers agreements for the sharing of park and recreation facilities.

5. Avenal should utilize, where appropriate, homeowners associations to maintain parkways, landscaped medians, and private parks.



Action - Where appropriate, the City shall require proposed subdivisions to create a homeowners associations to maintain open space areas.

6. Avenal should utilize, where appropriate, assessment districts to maintain parkways, landscaped medians, and private parks.

Action - The City shall require, when feasible, assessment districts for the maintenance of parkways, landscaped medians, and private parks.

7. City fees for recreation fees shall adequately reflect the costs associated with such use, such facilities.

Action - The parks and recreation department will review its recreation fees annually to determine if additional charges should be assessed, increased/decreased. Areas that could be considered for review include:

- Charging user fees for use of a facility or participation in an activity,
- Entrance fees for admission to a large park or other developed recreation area,
- Charging rental fees for the use of recreation equipment or property, and
- Admission fees can be charged for special events, exhibits, or rallies,

PLAN RECOMMENDATIONS

The City of Avenal currently is not meeting the overall acreage requirements for open space. In addition to not providing an adequate amount of open space, the existing park locations are not readily accessible to all the citizens in the City. Therefore, this document is proposing several new park locations.

To implement Plan policies, the following recommendations are proposed for implementation. Exhibit No. 12 provides the generalized locations of proposed future conservation, open space, parks and recreation facilities. Each of these areas is numbered to correspond with the following discussion.

Site No. 1 Site No. 1 refers to the designation of a scenic corridor along both sides of State Highway 269. The open space which flanks State Highway 269 north of the urbanized area is perceived as a unique element of the community. Preserving and enhancing this area will provide a entryway that reflects the natural setting of the community. The establishment of a 500 foot wide scenic corridor along State Highway 269 north to the first ridge line would conserve this natural resource.

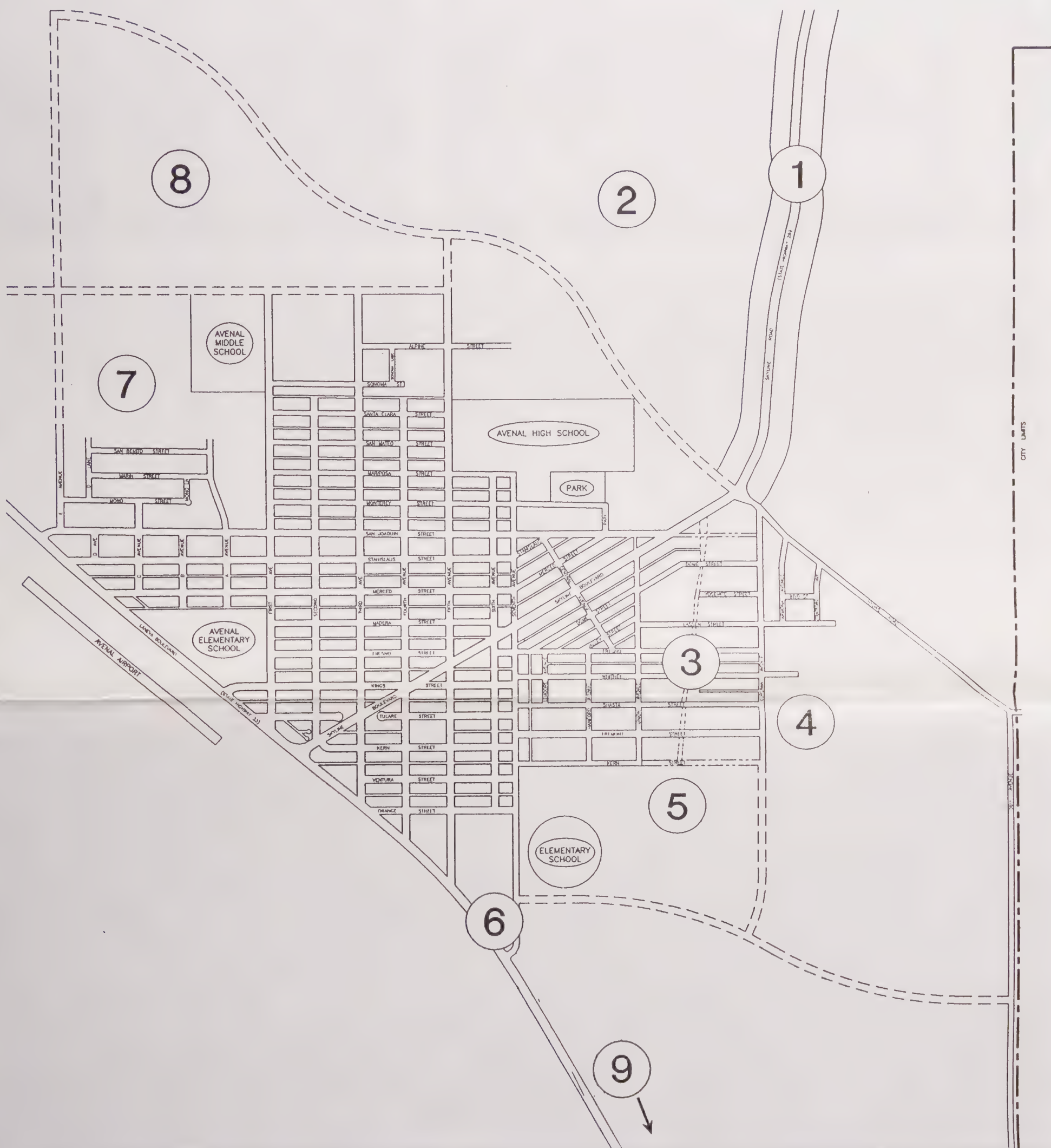
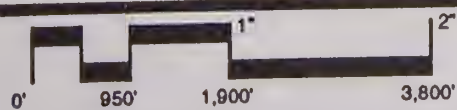


EXHIBIT 12

AVENAL GENERAL PLAN



**COLLINS & ASSOCIATES
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GENERALIZED FUTURE CONSERVATION, OPEN SPACE, PARKS AND RECREATION FACILITIES

- | | |
|-------------------|---|
| 1 SCENIC CORRIDOR | 6 PARK |
| 2 NATURE PRESERVE | 7 PARK |
| 3 CREEKWAY | 8 GOLF COURSE |
| 4 GUN CLUB | 9 SOFTBALL COMPLEX (100 ACRES LOCATED ON PRISON PROPERTY) |
| 5 PARK/POND | |



Site No. 2 This area is a proposed 285 acre site generally located on the west side of Skyline Blvd in Section 15. This area is to be designated as Open Space by the Avenal Land Use Element. This area currently contains the existing horse corrals and vacant hillsides. This area is designated as a nature preserve and passive recreation area. Use of this area would include: pedestrian and equestrian trail systems, open space area which would provide for the conservation of existing habitat for rare and endangered animals (especially for the San Joaquin Kit Fox and the Blunt-nose Leopard Lizard), and picnic sites.

Site No. 3 This site is currently the Arroyo del Camino. It is an unimproved water course that runs in a north-south direction through the eastern portion of the community. The arroyo contains water on an intermittent basis, depending on the amount of runoff from the foothills. This Element proposes that this waterway be improved to provide not only an aesthetic improvement to the area, but also to allow some pedestrian and bike circulation. The channel is currently an eyesore to the community. It is littered with debris and weeds are found along the ditch banks creating a potential fire hazard.

Site No. 4 This site is proposed as a potential 2 acre park site serving the eastern quadrant of the City. This type of park facility could provide active as well as passive recreational opportunities.

Site No. 5 This site is recommended as a 15 acre park site combined with storm drainage retention capabilities. City parks can function as storm water storage basins. A dual-purpose facility that provides active recreational opportunities and can be used to store stormwater runoff is referred to as a "park/pond".

There are no existing storm drainage ponds in the southern quadrant of the City. Avenal's drainage pattern flows in a southwesterly direction. The opportunity to direct storm water was provided with the installation of curb and gutter throughout the City. These storm waters currently have no formal ponding site and therefore end up sheet flowing across the Laneva Blvd. and ponding in the low-lying area south of the airport. A large park/ponding basin located south of Kern Street between Union and Corcoran Streets would help alleviate some of these problems.

✓ **Site No. 6** This 4-acre site is currently designated as a park site and was acquired by the City through the 1987 Per Capita Park Grant. This Element recommends that this site be rezoned for commercial uses. The Grant monies could then be rechanneled to acquire a more desirable and larger park site i.e. Site No. 4.

Site No. 7 This site is a 7 acre park/pond facility. This site is envisioned to provide active as well as passive recreational facilities.



Site No. 8 Site No. 8 is designated as a Specific Plan area which will include low density residential development and a golf course. The site is comprised of approximately 160 acres, 80 acres of which would be set aside for the development of a nine-hole golf course.

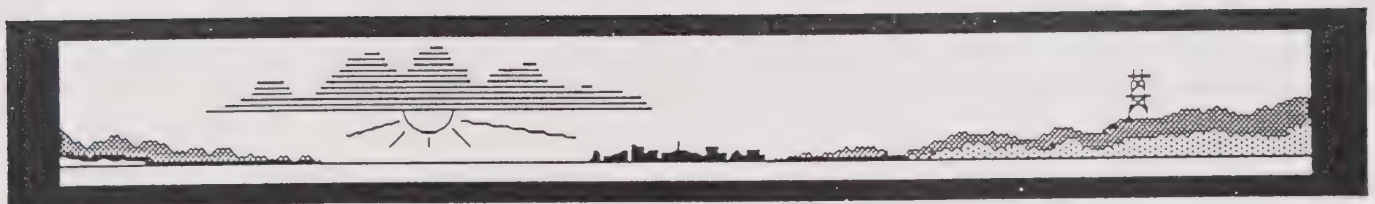
Site No. 9 Site No. 9 is a proposed 100 acre softball complex. The site is located on the east side of Highway 33 in Section 34. The City is currently trying to obtain a grant to assist in the development of this complex.

CONCLUSION

In conclusion, the Conservation, Open Space, Parks and Recreation Element will provide guidelines for the provision of convenient, well-equipped, and maintained sites and facilities, conservation of natural resources, and a comprehensive and quality program of recreational activities and services for all citizens of the community. The implementation of the Plan's goals and objectives will contribute to and maintain the quality of life that exists in the City of Avenal.

CHAPTER 5

SAFETY ELEMENT





CHAPTER 5 • SAFETY ELEMENT

INTRODUCTION

The Safety Element is one of seven State-mandated elements of a city's General Plan. Section 65302(g) of the Government Code requires cities to develop and adopt a Safety Element as follows:

[The General Plan shall include]"a safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence and other geologic hazards known to the legislative body; flooding; and wild land and urban fires."

The Safety Element in itself can not prevent natural disasters; however, it can provide standards that may help minimize the impacts of disasters on the human population and structural improvements in the area. It will also provide additional standards for planning structures that may be located in areas where there is a higher probability, or risk, of a disaster occurring. For instance, the Safety Element will require that homes built in the foothill area, which are more prone to have wildfires, to have tile or composition roofs to minimize impacts of fires.

Safety of the citizens of Avenal is uppermost in the minds of the local decision-makers. This Element will provide a guideline towards developing a safer environment for the community. Local decisions related to zoning, subdivisions, entitlements permits and the like should be tied to this Element's identification of such hazards.



THE ELEMENT

The Safety Element is the primary vehicle for relating local safety planning to City land use decisions. The Element's main purpose is to reduce death, injuries, property damage and the economic and social dislocation resulting from natural hazards. In 1975, the Legislature adopted SB 271, which made the safety element a mandatory part of the General Plan. At that time, the element was required to include policies relating to fire safety, flooding, and geologic hazards.

In 1984, the Legislature adopted AB 2038, which requires that the list of mandatory safety element issues be expanded to include seismic safety. Essentially, the Legislature took the issues previously considered in the seismic safety element and made them safety element requirements.

While the focus of the safety element is on fire, flooding, seismic and geologic hazards, it may also address locally relevant safety issues such as vehicle accidents, crime, power failures, and hazardous material spills. For Avenal, two locally relevant safety issues include the prison and hazardous land use relationships.

SAFETY ELEMENT ORGANIZATION

The Avenal Safety Element contains three primary components:

- 1) existing conditions
- 2) community goals
- 3) issues, policies, and action programs, which implements the goals and policies;



EXISTING CONDITIONS

The City of Avenal is located at the western edge of the San Joaquin Valley. The city limits straddle the Kettleman Hills, while the urbanized portion of the city is located on the Kettleman Plain. The location of Avenal directly relates to the types of safety issues that must be addressed in this Element.

Briefly discussed below are existing conditions pertaining to specific issues relating to safety in the City of Avenal. These issues include: seismicity, geology, flooding, fire, prison, and hazardous land use relationships. A more detailed description of these issues and additional background information on Avenal is found in Section 2 of this document.

Seismic Safety

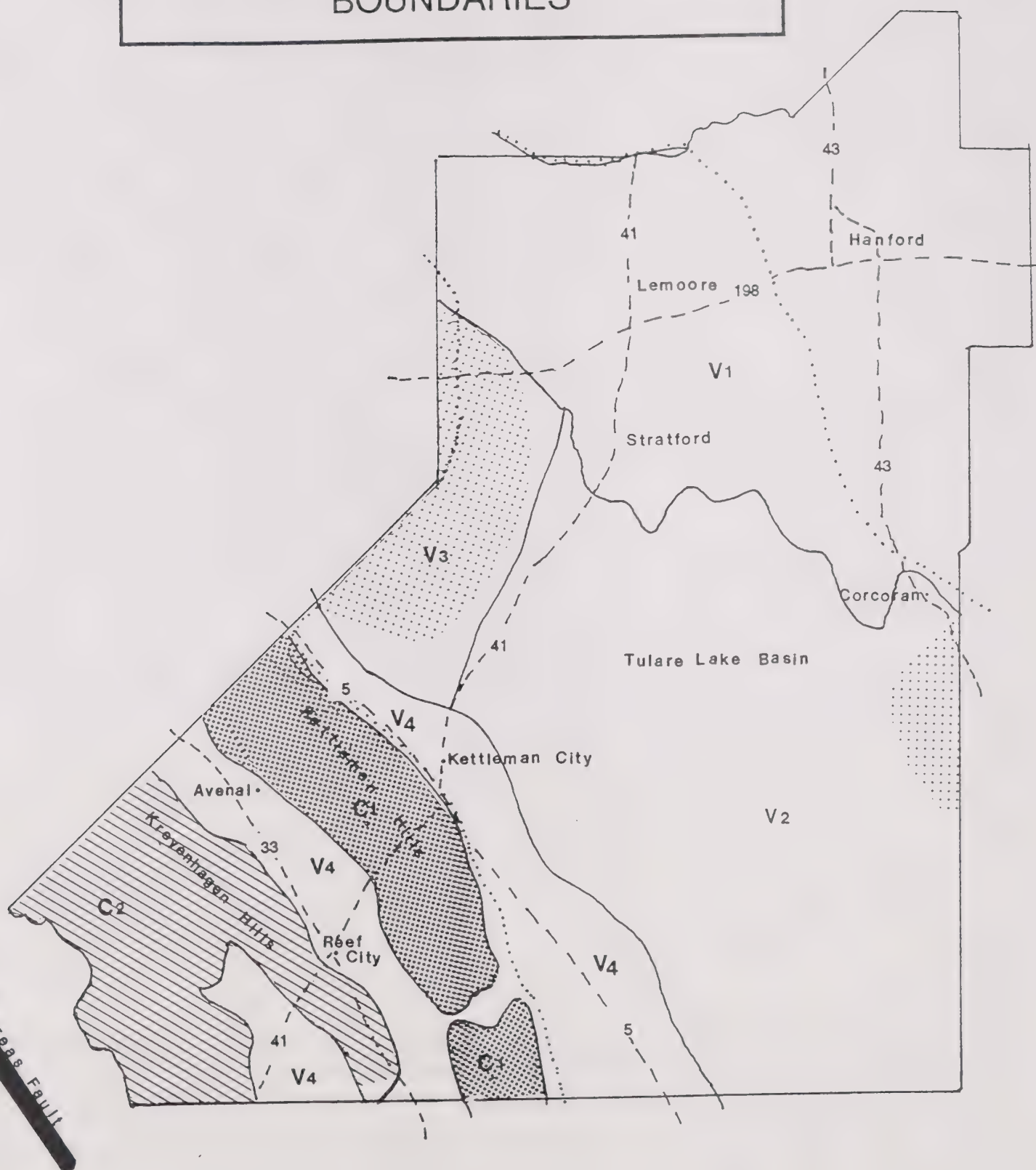
Kings County is made up of six seismic zones. These zones are determined by the differences in earth properties relative to the distance from the fault zones which then determines the amount of ground shaking that can be expected in a given area. Exhibit No. 14 provides the seismic hazard zone boundaries for Kings County. Avenal is located within the C1 Seismic Zone. Below are brief summaries of each seismic zone:

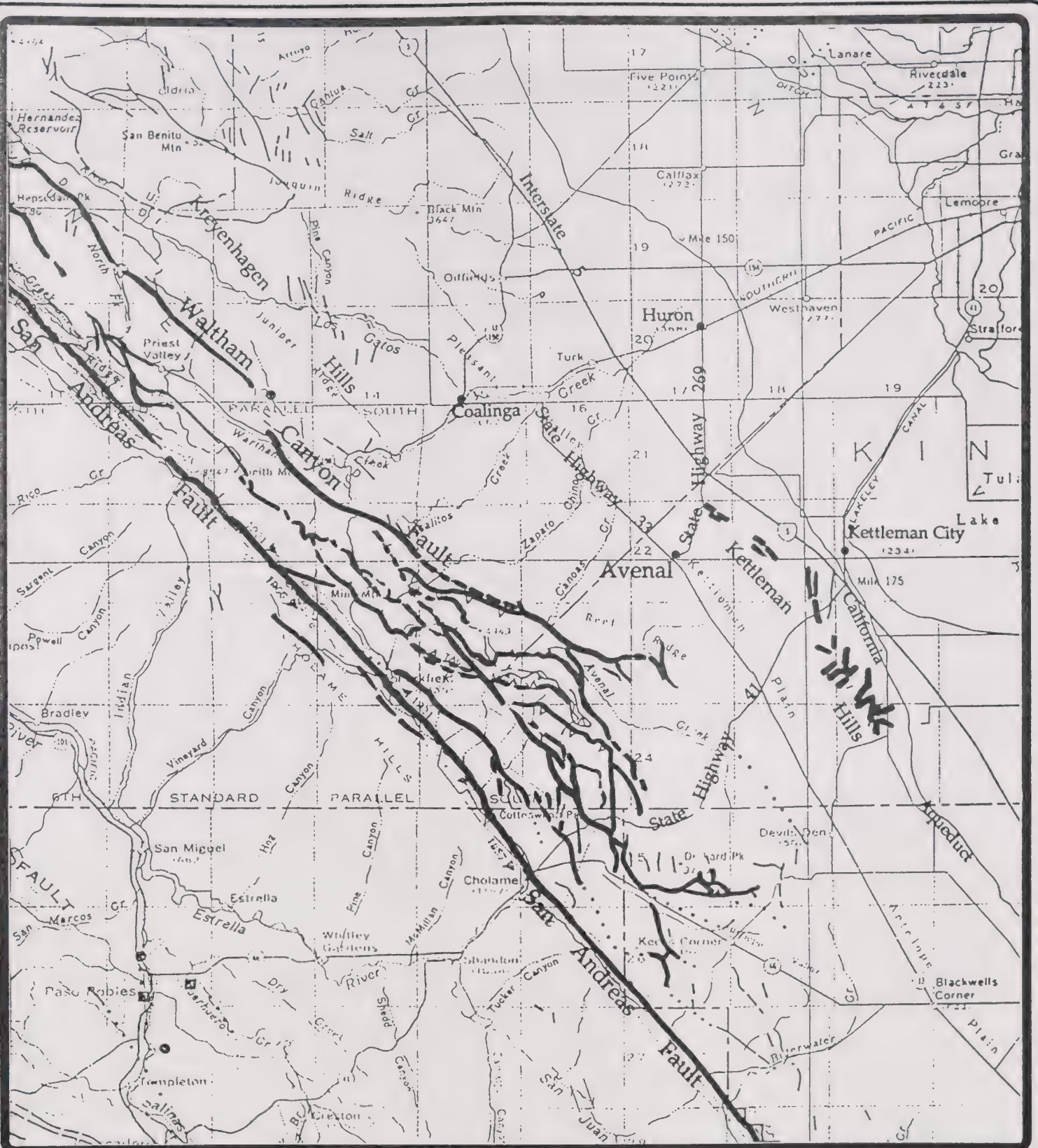
1. The Coast Range Zone (C1, C2) have low near-surface amplification, but these zones are so close to the San Andreas fault zone that the ground shaking levels will be moderately high.
2. The Valley Zones (V1 through V4) vary with respect to amplification of ground shaking across the County, roughly in an east-west vertical pattern. The highest near-surface amplification occurs on the west side of the Valley and decreases to the east because of damping of the thick alluvial section. (Kings County Public Safety Element, 1977)

No major fault systems are known to exist in Kings County. However, seven potentially active faults are within 70 miles of Avenal. A major zone of "active settlement" occurs north and northeast of the the Kettleman Hills, but is centered in Fresno County. There are three active faults located just outside of Kings County. Exhibit No. 15 illustrates the location map of these faults.

EXHIBIT 14

SEISMIC HAZARD ZONE BOUNDARIES





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ACTIVE FAULTS

EXHIBIT NO. 15



Earthquakes

Although Kings County does not have any major faults within its boundaries, Avenal is considered to be in a seismically active area. Several earthquakes have impacted the City. The most notable earthquake in the area occurred in May, 1983. An earthquake with a measured magnitude of 6.7 on the Richter scale (Rs) occurred approximately 17 miles northeast of Avenal in the City of Coalinga. The earthquake produced a ground motion which caused widespread damage to the City of Coalinga. A second earthquake which was felt in Avenal occurred in August, 1985. This measured 5.6 Rs and was considered to be an aftershock of the Coalinga earthquake. One building in Avenal collapsed as a result of the aftershock. It also caused broken windows and cracks in pavement and buildings. The Coalinga earthquake and aftershocks were not associated with the San Andreas Fault as most people believed, but rather, occurred in the deeply buried Sierran Block Boundary zone, which is thought to be made up of complex thrust fault systems.

A study prepared by Golder Associates for the Chem Waste, Kettleman Hills facility determined that the thrust fault poses the greatest seismic threat to the area. Maximum credible earthquakes (MCE's) from this fault have been predicted to range from 6.5 to 7.0 on the Richter scale. The San Andreas Fault, located approximately 15 miles southwest of the City, also poses significant seismic risk. The Slack Canyon - Highway 58 segment of this fault is capable of producing an MCE with a magnitude of 7.2 at a recurrence interval of 140 years. The Slack Canyon - Chopin segment is very active and can produce an MCE with a magnitude of 6.3 at a recurrence interval of 22 years.

As stated above, the City of Avenal is located in the C1 seismic zone, which is characterized by firm to hard sedimentary rocks. Primary hazards due to groundshaking are "moderate" to "high" because of the proximity to the San Andreas Fault. Landslides are the only significant secondary hazard and pose a "moderate" to "high" risk within the planning area.

The City is currently in the process of developing a Disaster Council, the purpose of which, is to develop plans for a variety of emergency situations, earthquakes included. The City has also adopted the 1988 Uniform Building Code, which provides standards that reduce potential damage from earthquakes.

Fire Hazards

In Avenal there are two types of fire classifications - wildland/vegetation fires and built environment fires. The wildland/vegetation fires occur in sparsely populated rural areas, whereas built environment fires occur in urban or urban fringe areas. According to the Kings County Fire Department, the majority of emergency fire responses occur in the outlying grassy areas of Avenal.



The most important aspects of wildfire behavior are the availability and types of fuel, topography and weather. These three aspects help determine the hazard rating of wildland fires.

According to the Kings County Public Safety Element, fuel characteristics are the main factor in determining the severity of wildfires. Among the fuel characteristics that contribute most to a high intensity fire are fuel loading per unit of land area, moisture content, a proportion of large sized fuels, and a ratio of dead vegetation to living vegetation.

According to the Kings County Fire Department, the majority of fires in the Avenal area are dry grass fires, approximately 20 fires per year. Dry grass is considered a small size fuel. Typically, it generates a lower intensity fire, but spreads rapidly. In Avenal, these grass fires break out in the foothills surrounding the urbanized portion of the City. Within the city limits, there are 5,055 acres of land used for oil and gas exploration and grazing. This is approximately 43% of the total area of the City. The hills are mostly made up of natural grass; however, there is also a large amount of oil industry structures that dot the hillsides. According to the Fire Department, the oil wells do not pose a major fire risk. Generally, the grass fires burn so quickly that they pass over the oil wells without igniting them.

Irrigated agricultural lands make up 30% of the planning area. Although irrigation and cultivation practices tend to minimize fire hazard through the removal of dead vegetation and the maintenance of high moisture content, harvesting conditions do contribute to fire hazards.

The second contributor to fire hazards is topography. The effect of topography on fire is mainly related to slope conditions. Fires burn more rapidly upslope than downslope. The steeper the slope, the faster the fire will burn. This occurs because hot air from the fire rises, drying out uphill fuel. This causes it to ignite faster than downhill. The hilly topography surrounding Avenal poses a "high" wildland fire hazard. Access to these areas is limited - dirt roads - and water scarce. Firefighters must rely on a limited supply of water available from fire trucks and air transport when fighting fires in the hills.

The third contributor to fire hazards is weather. Avenal is a semi-arid climate that experiences dry, hot summers. The fire season, which runs from April to October, peaks in July when temperatures range from 95°F to 105°F. Weather elements that effect the number of and intensity of wildfires are precipitation, relative humidity (moisture content effects the dryness of the vegetation), and wind. Avenal typically experiences very little precipitation from April through October. This effects the moisture content of living and dead vegetation. Winds generally blow in a northwest to southwest direction varying in intensity from 0 to 7 miles per hour.



Based on Avenal's topography, weather and the availability of fuel, the State of California Resources Agency Reports classifies this area as a "moderate" risk in the Fire Hazard Severity Scale. "Extreme" and "high" hazard areas usually found in heavy wooded areas.

Fire protection is currently provided by the Kings County Fire Department and augmented with a local volunteer force. The County maintains a station house in Avenal with two professional fire fighters on duty 24-hours per day. The fire station maintains three engines and a squad truck. The County also has a two-man station in Kettleman City, fifteen miles east of Avenal.

In addition, the County Fire Department works closely with the California Department of Forestry (CDF) and the Avenal State Prison Fire Department. The County and CDF have a "dual responsibility" area west of State Highway 33. This means that they will both respond to fires in that area. The Avenal State prison maintains its own fire department at the prison site. The County indicated that they have a mutual aid agreement with the prison for fire services. The prison fire department works closely with the Kings County fire department and responds to almost all fires in the area. Although, the Departments work closely together, the prison department can not be relied on for response to all emergencies. For security reasons, it is unusual for the County to assist with fires at the prison.

The Kings County Fire Department indicated that all of the urbanized area of Avenal falls within a 3-minute response time. However, a portion of the city limits area does lie outside the required 5-minute response time. For instance, the area near Interstate 5 is an "uphill pull" from the existing station and would be approximately an eight minute response time. The northwestern city limit line (near the aqueduct) is an eleven minute response time. Exhibit No. 16 provides fire response time boundaries.

Since the construction of the prison in 1987, the Fire Department has noticed a significant increase in the number of emergency calls, especially for medical aid. Although the actual city population did not increase as much as anticipated, the number of vehicles traveling to and from Avenal did. This would include prison employees traveling to and from work and prison visitors. This has increased the number of motor vehicle accidents and medical calls to which the Fire Department responds. For instance, in 1985 the Department responded to 222 emergency calls. In 1991, total responses were up to 361. Although the number of responses has increased, no additional fireman have been hired.

Prison Outbreak

The safety of the citizens of the community must also be considered in the eventuality of prisoners escaping from the Avenal State Prison. Avenal State Prison is located in the southern portion of the City. In 1992, the Prison housed approximately 4,200 inmates. The population of the Prison fluctuates; however, at a

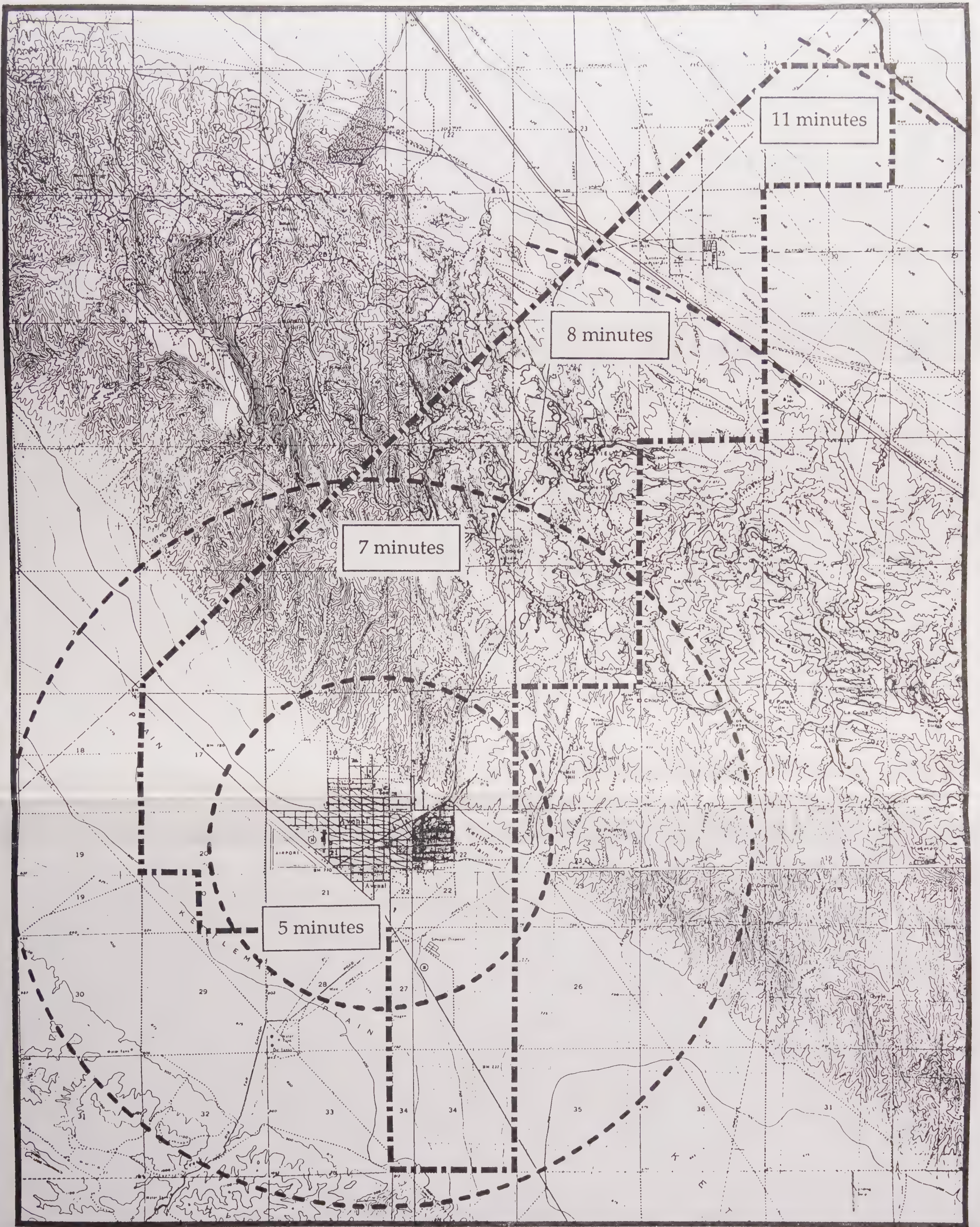
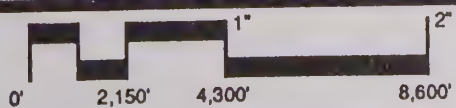


EXHIBIT 16

AVENAL GENERAL PLAN



**COLLINS & ASSOCIATES
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FIRE RESPONSE

APPROXIMATE FIRE CREW RESPONSE TIMES
SHOWN TO ALL AREAS OF THE COMMUNITY



II/low medium security facility. The State has four levels of security, Level 1 being the minimum security facility and Level 4 the maximum.

Since, the opening of the Prison in 1987, three escapes have occurred. These escapes have been "walk-away" escapes, meaning that they did not occur from within the Prison facility. The Prison has plans in place in case of an escape. Specifics of the plan are confidential; however, the Warden did indicate that notification of local law enforcement agencies is one of the first priorities of that plan. The Prison officials also indicated that city and school officials, the Kings County Sheriff department, fire departments and surrounding jurisdictions are notified when an escape occurs. The Prison maintains a list of those wishing to be notified in the event of an escape. In addition to the notification process, the Prison sends out search teams responsible for combing the area.

Flooding

Portions of Avenal are within the 100-year floodplain as identified by the Federal Emergency Management Agency (FEMA) on their Flood Insurance Rate Map. See Section 2 of this document for illustration of the 100-year floodplain.

During major storm events several arroyos upstream from Avenal are subject to flash flooding. Numerous accounts of flooding along Santa Clara Street below Arroyo Esquinado have been reported by Avenal residents. Arroyo del Camino is identified as a flood hazard on the FEMA flood insurance rate maps. This flooding, however, may be attributable to poorly maintained culverts and drainage ditches.

At least ten distinct watersheds drain into the urbanized portion of Avenal (see Exhibit No. 17. These drainages flow through or near the City of Avenal and onto the Kettleman Plain. A 1979 study of the drainage problem by McKee-Zumwalt and Associates calculated the potential runoff from these watercourses during 10-year and 100-year storm events. The findings of this study are listed in Table No. 10. The drainage of Camino Esquinado poses the greatest flood threat to the City. This watershed is capable of producing flows of 102 c.f.s. during a 10-year storm and 155 cfs during a 100-year event.



TABLE 10
Watershed Data

Drainage Unit	Drainage Area	Peak Flows	
		10-Year Storm	100-Year Storm
#1	306 ac	NA	NA
#2	148 ac	NA	NA
#3	265 ac	NA	NA
#4	436 ac	97 cfs	149 cfs
#5	160 ac	NA	NA
#6	177 ac	44 cfs	66 cfs
#7	74 ac	23 cfs	36 cfs
#8	23 ac	NA	NA
#9	507 ac	102 cfs	155 cfs
#10	69 ac	22 cfs	35 cfs
#11	577 ac	87 cfs	126 cfs

Source: McKee-Zumwalt, 1979

As seen, flooding does occur in Avenal. One of the areas that has historically been subject to inundation is the low-lying property south of the airport. This area does lie within the 100-year floodplain. In an effort to protect the community, this area is restricted from development. The Land Use Element designates this area as Agriculture.

Hazardous Land Use Relationships

Identification of existing hazardous land uses is also important to the safety of the citizens of Avenal. There are several uses within the City that generate a "risk" factor. These uses include: the airport, state highways which carry large volumes of truck traffic, the wastewater treatment plant, the PG & E compressor station, and the landfill. Relationships between land use types must be considered, especially when locating residential development.

The Land Use Element has eliminated most of the potential land use conflicts associated with the above uses by appropriately designating surrounding properties. For instance, potential conflicts with the landfill have been minimized by limiting urban development adjacent to this facility. Only a limited amount of low density residential development is proposed north of Hydril Road and it is separated from the landfill by a mountain ridge. The Land Use Element has also restricted development near the airport. The area surrounding the airport is designated as Agriculture. The wastewater treatment plant is surrounded by industrially designated properties; thereby, reducing potential land use conflicts.



A hazardous land use relationship that is more difficult to address is trucks carrying hazardous materials along the State highways. Avenal has two State highways (Highways 33 and 269) which carry a large amount of truck traffic. It is difficult to ascertain the amount of trucks carrying hazardous waste; however, the nearest hazardous waste site is located in Kettleman City. Traffic patterns suggest that the majority of trucks headed towards Kettleman City to deposit hazardous waste will travel on Interstate 5. Therefore, it appears that this type of hazard would not occur frequently. The Land Use Element has also addressed this issue by designating properties adjacent to the highways for nonresidential development. The PG & E Compressor station is another existing land use that may be considered hazardous. The compressor station compresses natural gas which expands as it travels through pipelines. Any time a combustible element is present, there is a certain amount of risk associated with its presence.

COMMUNITY GOALS

The following goals have been used as a guideline in the preparation of this Element:

1. *PREVENT THE LOSS TO LIFE AND PERSONAL PROPERTY DUE TO NATURAL AND MAN-MADE HAZARDS, INCLUDING EARTHQUAKES, FLOODS AND FIRES.*
2. *SAFEGUARD THE ECONOMIC RESOURCES OF THE CITY FROM LOSSES DUE TO NATURAL AND MAN-MADE HAZARDS, INCLUDING EARTHQUAKES, FLOODS AND FIRES.*
3. *PROMOTE CITIZEN AWARENESS OF THE IMPLICATION OF NATURAL AND MAN-MADE HAZARDS WHICH EXIST IN THE REGION.*

THE PLAN

This portion of the Element establishes policies and implementing action programs that will implement the Safety Element's goals - a safe environment for the citizens of Avenal.

The first part of the Plan is the identification of issues relating to safety in the City of Avenal. The second part is the statement of policies that will guide future decisions regarding these issues. The third part of the Plan is the Action program. These programs will serve to implement the policies. For example, fire safety relative to grass fires is an issue in Avenal. The action program will provide a framework for reviewing developments that may be located in area especially sensitive to fire hazards.



SEISMIC AND GEOLOGIC SAFETY

Issues

The City of Avenal is located in an area that is seismically active. Primary hazards due to groundshaking are moderate to high because of its proximity to the San Andreas fault. One way to minimize potential damage from an earthquake is to adopt adequate building standards for all new and rehabilitated structures. A City can also minimize impacts of a significant earthquake by having an emergency plan in place prior to the event. The emergency plan should include provisions for shelter, evacuation, medical and fire aid. The City of Avenal has established a Disaster Council in preparation for such emergencies.

According to the State of California Division of Mines and Geology, Avenal is not located in an area prone to landslides or mudslides. However, during times of heavy precipitation, some of the intermittent waterways (arroyos), carry large amounts of sediment, which may be similar to a small mudslide. Development adjacent to the arroyos should be limited to minimize these occurrences.

Policies and Action Programs

1. The City shall insure that all new and rehabilitated structures are constructed to meet adequate building standards.

Action - The City of Avenal shall adopt building code standards for Seismic Zone 4 as described in the Uniform Building Code.

Action - The City shall continue the abatement/rehabilitation of unreinforced masonry buildings.

2. The City shall review the State Mining and Geology Board's publications which define Special Studies Zones for areas along fault lines.

Action - The planning department shall review State Mining and Geology maps as they are updated.

3. The City of Avenal shall help to insure the public's health, safety, and welfare by recognizing potential geologically unstable conditions that could endanger the lives and property of the City of Avenal residents.

Action - Development shall only be permitted in areas susceptible to landslides or unstable slopes only if the following criteria has been met:

- a) Plans for foundations and structures have been designed by a registered civil engineer.



b) Said plans are to be submitted to and reviewed by the City Engineer.

c) The plans are to include erosion control measures.

Action - The City shall require that cut and fill slopes not exceed 25 feet. Said slopes shall be planted with vegetation to prevent erosion.

4. In areas where there is no city sewer and/or water service, septic tanks and leach fields are not to be permitted unless it is demonstrated to the satisfaction of the City Engineer that the septic system will not have an adverse environmental effect.

Action - The City Engineer shall review all proposed septic systems to insure that they will not adversely impact the environment.

5. The City of Avenal shall continue the abatement/rehabilitation of dangerous buildings as defined by the Uniform Building Code.

Action - The building department shall identify dangerous buildings and target them for abatement or rehabilitation.

6. The City shall continue to provide for a Disaster Council. The Council's mission shall be to:

- Plan for emergency preparedness through out the City.
- Educate the public on emergency preparedness.
- Coordinate with County and State officials to minimize confusion in times of an emergency.
- Plan and conduct community wide emergency drills.

Action - The Disaster Council shall formulate emergency response plans for the community. These plans shall be available to all citizens of Avenal.

FIRE SAFETY

Issues

The City of Avenal is located in an area that is subject to grass fires. Generally, these fires occur in areas that do not pose public safety problems, but as the City continues to grow, development is occurring closer to these areas, thus increasing risks to the human population. The urbanized portion of the City is located within a



Blvd. However, there are areas within the city limits that fall outside of the 5-minute response time. As new development occurs in these areas, built-in fire safety mechanisms should be required. These may include fire sprinklers, water storage tanks, fire retardant building materials, and maintenance of adequate fire breaks.

Policies and Action Programs

1. The City and Kings County shall endeavor to provide adequate fire services to all residents in the City of Avenal.

Action - The City of Avenal shall coordinate with the Kings County Fire Department to require that development not create a burden on their services.

2. The City of Avenal shall require new development to meet updated fire safety standards.

Action - The City shall encourage the use of fire retardant roofing materials. In the foothill areas only composition roof or tile roofing shall be permitted.

Action - The City shall amend the Municipal Code to require fire sprinklers for all industrial and commercial developments. Said systems shall be designed as per Fire Department requirements.

Action - In areas where City water is not available, developers shall be required to install onsite water storage tanks per Fire Department requirements.

3. The City of Avenal shall coordinate with the Kings County Fire Department to provide prevention and public education to the residents to reduce the demand fire protections services.

Action - The City shall contact the Fire Department to initiate a fire prevention education program with the Reef Sunset Unified School District.

4. The City of Avenal shall continue to maintain and improve its volunteer fire department.

Action - The City shall support the volunteer fire department by providing an adequate training program, soliciting additional volunteers, and lending financial support, when needed.

5. The City shall require that yards and lots be maintained free of weeds and debris.



Action - The Kings County Fire Department shall send annual abatement letters to property owners who have properties where weed and debris build-up pose a public safety problem.

6. The City shall require all new developments in areas adjacent to or near grass land areas to provide a 100 foot clearing from any structures. This area shall be cleared annually or landscaped with fire resistant landscaping to prevent the spread of fire into developed areas.

Action - The planning and public works department shall review all proposed development to insure that there is a minimum of 100 feet of clearance from all grasslands to the nearest structural improvements.

PRISON HAZARD

Issues

Avenal State Prison is located in the southern portion of the City. The prison houses approximately 4,200 inmates. The population of the prison will fluctuate; however, at a maximum the prison will have approximately 5,000 inmates. The Prison is a level II/low medium security facility. The State has four levels of security, Level 1 being the minimum security facility and Level 4 the maximum. Since, the opening of the prison in 1987, three escapes have occurred. These escapes have been "walk-away" escapes, meaning that they did not occur from within the Prison facility. The Prison has plans in place in case of an escape. Specifics of the plan are confidential; however, the Warden did indicate that notification of local law enforcement agencies is one of the first priorities of that plan.

Policies and Action Programs

1. The City shall work with the Avenal State Prison to provide a safe, secure environment for the citizens of Avenal.

Action - In the event of an escape, the City and the Kings County Sheriff's Department shall provide any additional support services as may be necessary.

FLOOD HAZARDS

Issues

Portions of Avenal are within the 100-year floodplain as identified by the Federal Emergency Management Agency (FEMA). During major storm events several arroyos upstream from Avenal are subject to flash flooding. Numerous accounts of



flooding along Santa Clara Street below Arroyo Esquinado have been reported by Avenal residents. Arroyo del Camino is identified as a flood hazard on the FEMA flood insurance rate maps.

In an effort to address flooding issues in Avenal, the City has recently installed curb and gutter improvements throughout the urban area. These improvements will alleviate flooding in some areas. In addition, the Land Use Element restricts development in flood prone areas.

Policies and Action Programs

1. The City shall reduce the risks related to flood hazards.

Action - The City shall require that any proposed development in areas subject to flooding, be designed by a registered civil engineer. All plans are subject to review and approval by the City Engineer.

2. The City shall improve the handling of drainage from Arroyo del Camino.

Action - Arroyo del Camino shall be improved to provide drainage from the north part of the community to the south. The Conservation, Open Space, Parks and Recreation Element designates a park/pond at the southern terminus of the Arroyo to accommodate storm water runoff.

3. Development shall be prevented from encroaching into natural drainage ways.

Action - Through site plan review, development shall be prevented from occurring in natural drainage channels.

4. The City shall provide a Storm Drainage Master Plan to reduce the risk of flooding in Avenal.

Action - The City shall establish a storm drainage utility. Said utility shall set and collect storm drainage acreage fees for use in the construction of flood control projects, including channels and detention/retention facilities.

5. No development shall occur on the west side of State Highway 33 near the airport. This area has historically been prone to flooding.

Action - Adoption of the Land Use Element will provide implementation of this policy item.



HAZARDOUS LAND USE RELATIONSHIPS

Issues

Relationships between land use types should also be considered especially when locating residential development. There are many hazardous uses that would not be appropriate adjacent to residential uses or schools. For example, residential development northeast of the community should not extend north of the first ridge. This will prevent conflicts with the existing landfill. Another example of this would be limiting residential development adjacent to the State Highways 33 and 269. Both of these routes carry a large amount of truck traffic which may be transporting hazardous materials. Other existing land uses that may limit adjacent land uses include the airport, the wastewater treatment plant, and the Prison.

Policies and Action Programs

1. Development in close proximity to the landfill shall be avoided.

Action - Adoption of the Land Use Element prevents development from encroaching too close to the landfill.

2. Residential land uses shall be limited adjacent to the State Highway 33 and State Highway 269.

Action - Adoption of the Land Use Element shall provide implementation of this policy.

3. Development adjacent to the airport shall be restricted.

Action - Adoption of the Land Use Element shall provide implementation of this policy.

4. Development adjacent to the wastewater treatment plant shall be limited to industrial uses.

Action - Adoption of the Land Use Element shall provide implementation of this policy.

5. Businesses that use, produce or generate any type of hazardous materials shall be conducted in a safe manner.

Action - The City shall require that proposals for development include and emergency preparedness plan. All new industrial uses shall be required to prepare and file a Business Plan as required by the Kings County Health Department.



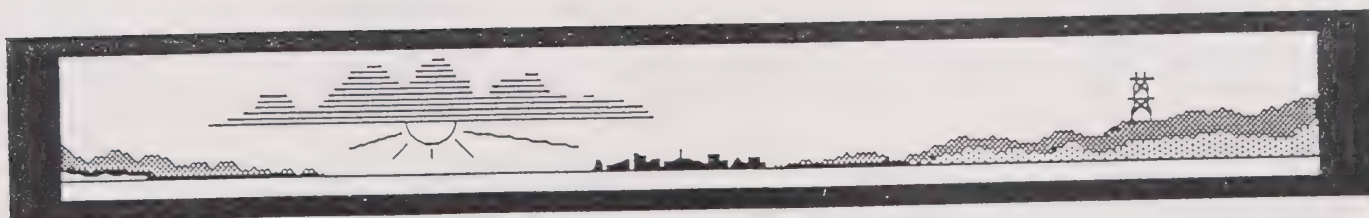
CONCLUSION

There are a variety of hazards that can adversely affect life and property in Avenal. These hazards include: flooding, wildfires, earthquakes, prison outbreaks and hazardous land uses. Occurrences of disasters such as earthquakes, fires and floods can not be controlled by the City. Avenal can, however, minimize the impacts of such an event by preparing for them in advance. Implementation of adequate building standards, appropriate land use designations, adequate fire protection services and preparation of emergency plans are just a few ways in which the City can provide a safer environment for its citizens. Implementation of the Safety Element's policies and action programs will contribute to and maintain the quality of life that exists in the City of Avenal.

C H A P T E R

6

NOISE ELEMENT





CHAPTER 6 • NOISE ELEMENT

INTRODUCTION

The Noise Element of the General Plan is a planning document which provides a policy framework for addressing potential noise impacts encountered in the planning process.

The content of the Noise Element and the methods used in its preparation have been determined by the requirements of Section 65302(f) of the California Government Code and by Guidelines for the Preparation and Content of Noise Elements of the General Plan adopted and published by the California Office of Noise Control (ONC) in 1976. The ONC Guidelines require that major noise sources and areas containing noise-sensitive land uses be identified and quantified by preparing generalized noise exposure contours for current and projected conditions.

According to the Government Code requirements, noise exposure information should be included in the Noise Element for the following major noise sources:

1. Highways and freeways
2. Primary arterials and major local streets
3. Railroad operations
4. Aircraft and airport operations
5. Local industrial facilities
6. Other stationary sources

Noise-sensitive uses identified by the Government Code and by the City of Avenal include the following:

1. Residential development
2. Schools
3. Hospitals, nursing homes
4. Churches
5. Libraries



The Noise Element is directed at minimizing future noise conflicts. A Noise Ordinance, on the other hand, is directed at resolving existing noise conflicts. A Noise Ordinance may be used to address noise levels generated by existing industrial, commercial, agricultural and residential uses, which are not regulated by federal or state noise level standards. The regulation of noise sources such as traffic on public roadways, railroad line operations and aircraft in flight is preempted by existing federal and/or state regulations, meaning that such sources generally may not be addressed by a Noise Ordinance. The Noise Element addresses the prevention of noise conflicts from all of these sources.

Relationship to Other Elements of the General Plan

The Noise Element is related to the Land Use, Housing, Circulation and Open Space Elements of the General Plan. Recognition of the interrelationship of noise and these four mandated elements is necessary to prepare an integrated general plan and to initiate changes which will reduce noise exposure to acceptable levels in areas where noise may presently exceed the levels set forth by the adopted policies of the Noise Element. The relationship between these elements is briefly discussed below:

1. Land Use: An objective of the Noise Element is to provide noise exposure information for use in the Land Use Element. When integrated with the Noise Element, the Land Use Element will show acceptable land uses in relation to existing and projected noise levels.
2. Housing: The Housing Element considers the provision of adequate sites for new housing and standards for housing stock. Since residential land uses are noise-sensitive, the noise exposure information of the Noise Element must be considered when planning the locations of new housing. The State Noise Insulation Standards may influence the locations and construction costs of multi-family dwellings, which should be considered by the Housing Element.
3. Circulation: The circulation system, which is a major source of noise, must be correlated with the Land Use Element. This is especially true for roadways which carry significant numbers of trucks. Noise exposure will thus be a decisive factor in the location and design of new transportation facilities, and in the mitigation of noise produced by existing facilities upon existing and planned land uses.
4. Open Space: Excessive noise adversely affects the enjoyment of recreational pursuits in designated open space, particularly in areas where quiet is a valued part of the recreational experience. Thus, noise exposure should be considered in planning for this kind of open space use. Conversely, open space can be used to buffer noise-sensitive uses from noise sources by providing setbacks and visual screening.



Noise And Its Effects On People

Appendix A provides a discussion of the fundamentals of noise assessment, the effects of noise on people and criteria for acceptable noise exposure, and is a reference for use by the City during the review of documents or proposals which refer to the measurement and effects of noise.

Definitions

1. A-Weighted Sound Level: All sound levels referred to in this policy document are in A-weighted decibels. A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects.
2. Community Noise Equivalent Level (CNEL): The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.
3. Day/Night Average Sound Level (Ldn): The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.
4. Equivalent Sound Level (Leq): The sound level containing the same total energy as a time varying signal over a given sample period. Leq is typically computed over 1, 8 and 24-hour sample periods.
5. New Development: Projects requiring land use or building permits, but excluding remodeling or additions to existing structures.
6. Noise-Sensitive Land Use: Residential land uses, transient lodging, schools, libraries, churches, hospitals and nursing homes.
7. Outdoor Activity Areas: Patios, decks, balconies, outdoor eating areas, swimming pool areas, yards of dwellings and other areas which have been designated for outdoor activities and recreation.
8. Stationary Noise Source: Any fixed or mobile source not preempted from local control by existing federal or state regulations. Examples of such sources include agricultural, industrial and commercial facilities and vehicle movements on private property.



9. Transportation Noise Source: Traffic on public roadways, railroad line operations and aircraft in flight. Control of noise from these sources is preempted by existing federal or state regulations. However, the effects of noise from transportation sources may be controlled by regulating the location and design of adjacent land uses.

EXISTING AND FUTURE NOISE ENVIRONMENT

Overview of Sources

Based on discussions with City staff, the requirements of the Government Code and field studies conducted during the preparation of the Noise Element, it was determined that traffic on local roadways is a potentially significant source of community noise within the City of Avenal. Roadways of concern include State Routes (SR) 33 and 269 and Interstate 5 (I-5). There is also an airport located within the community, but the number of daily operations is too low to create a noise level in excess of applicable noise level standards in areas where noise-sensitive land uses are located. Major roadways are indicated on Exhibits 18 and 19.

Methods Used to Develop Noise Exposure Information

According to the Government Code and ONC Guidelines, noise exposure contours should be developed in terms of the Day-Night Average Level (Ldn) or Community Noise Equivalent Level (CNEL) for transportation-related noise sources. Both of these descriptors represent the weighted energy noise level for a 24-hour day after inclusion of a 10 dB penalty for noise levels occurring at night between the hours of 10:00 p.m. and 7:00 a.m. The CNEL descriptor also includes a penalty of about 4.8 dB for noise levels occurring during the evening hours of 7:00 p.m. and 10:00 p.m. The CNEL descriptor was developed for the quantification of aircraft noise, and its use is required when preparing noise exposure maps for airports within the State of California. The CNEL and Ldn descriptors are generally considered to be equivalent to each other for most community noise environments within 1.0 dB. The Ldn descriptor has been used in this Noise Element to quantify noise from the above-described major noise sources identified by the City for study.

Analytical noise modeling techniques were used to develop generalized Ldn contours for major roadways within the City for existing and future conditions. Analytical noise modeling techniques generally make use of source-specific data, including average levels of activity, hours of operation, seasonal fluctuations, and average levels of noise from source operations. Analytical methods have been developed for many environmental noise sources, including roadways, railroad line

EXHIBIT NO. 18



Noise Monitoring Site I-5 Area





operations, railroad yard operations, industrial plants and aircraft/airport operations. Such methods will produce reliable results as long as data inputs and assumptions are valid for the sources being studied.

The noise exposure information developed during the preparation of the Noise Element does not include all conceivable sources of industrial, commercial or agricultural noise within the City, but rather focuses on the existing sources of noise which have been identified by the City as being significant. As the policies of this Noise Element are applied in the future, it is likely that other potentially significant sources will be identified.

Roadways

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop Ldn contours for SR 33, SR 269 and I-5. The FHWA Model is the analytical method currently favored by most state and local agencies, including Caltrans, for highway traffic noise predication. The Model is based upon reference energy emission levels for automobiles, medium trucks (2 axles) and heavy trucks (3 or more axles), with consideration given to vehicles volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly Leq values for free-flowing traffic conditions, and is generally considered to be accurate within + 1.5 dB. The Model assumes a clear view of traffic with no shielding at the receiver location. To predict Ldn values, it is necessary to determine the hourly distribution of traffic for a typical day and adjust the traffic volume input data to yield an equivalent hourly traffic volume. The Calveno traffic noise emission curves were used as recommended by Caltrans to more accurately calculate noise levels generated by California traffic.

For all roadways being studied, existing (1990) and future (2010) annual average daily, traffic (AADT) volumes and percentages of trucks were obtained from Caltrans. Since the day/night distribution of traffic was not available from Caltrans, data for similar roadways from BBA files were utilized. Vehicle speeds assumed during the traffic noise modeling process were the posted vehicle speeds.

Distances from the center of the roadways to the 60 and 65 dB Ldn contours along with input data used during the traffic noise modeling process Table 11.

TABLE 11

**DISTANCE TO L_{dn} CONTOURS AND TRAFFIC DATA
CITY OF AVENAL**

	AADT		D%/N% ²	%MT ³	%HT ⁴	Speed (MPH)	Distance to L _{dn} Contours (Feet) ¹			
							1990		2010	
Roadway	1990	2010					65 dB	60 dB	65 dB	60 dB
SR 33:										
South of SR 269	1600	3632	75/25	4.1	3.2	55	43	92	74	159
North of SR 269	1500	3405	75/25	4.1	3.2	55	41	88	71	152
SR 269:										
SR 33-Hydril Ave.	4750	9215	75/25	9.2	15.4	30	101	218	157	339
Hydril Ave.-I-5	4750	9215	75/25	9.2	15.4	55	143	308	222	479
I-5:										
South of SR 269	23,100	36,267	75/25	2.7	21.2	65	521	1122	703	1515
North of SR 269	22,000	34,540	75/25	2.7	21.2	65	504	1086	681	1467

¹Distances are from center of roadway

²Day/Night traffic split (day is defined as 7am-10pm and night as 10pm-7am)

³Medium Trucks

⁴Heavy Trucks

Sources: Caltrans
Brown-Buntin Associates, Inc.



Community Noise Survey

A community noise survey was conducted in the City during June 1992 to document background noise levels in areas where noise-sensitive land uses are located. Short-term monitoring was conducted once during the daytime (7:00 a.m.-10:00 p.m.) and once during the nighttime (10:00 p.m.-7:00 a.m.) so that estimates of the Ldn could be prepared. One long-term site was established to record the variation of noise levels through a full 24-hour period. The data collected during the survey included the Leq and the observed minimum and maximum noise levels. Noise monitoring sites, measured noise levels and estimated Ldn values at each site are listed in Table 12. Hourly variations in noise levels at the long-term monitoring site are shown in Figure 2. Monitoring site locations are shown in Exhibits 18 and 19.

Results of the community noise survey indicate that existing background noise levels in many areas of the City that contain noise-sensitive land uses are relatively quiet. To preserve quiet conditions, noise level standards and policies have been adopted to prevent degradation of the existing noise environment as much as possible.

TABLE 12
SUMMARY OF COMMUNITY NOISE SURVEY DATA

Site #	Location	Level, dBA				L _{dn}
		L _D	L _N	L _{max} (Source)	L _{min} (Source)	
1	Avenal City Park	51	39	61 (Children)	35 (Crickets)	48-52*
2	Avenal District Hospital	42	38	52 (Traffic)	33 (Crickets)	43-47*
3	Avenal Elementary School	52	38	67 (Traffic)	35 (Crickets)	49-53*
4	St. Joseph's Catholic Church	43	38	53 (Traffic)	36 (Unknown)	44-48*
5	City Water Tank #2	51	49	62 (Traffic)	41 (Unknown)	54-58*
A**	1013 Lassen	46	39	70 (Unknown)	27 (Unknown)	47

L_D = L_{eq} for one 15-minute sample obtained between 7:00 a.m. and 10:00 p.m. except for Site A where 24-hour monitoring was conducted.

L_N = L_{eq} for one 15-minute sample obtained between 10:00 p.m. and 7:00 a.m. except for Site A where 24-hour monitoring was conducted.

* L_{dn} estimated from L_D and L_N

** 24-hour monitoring site.

Source: Brown-Buntin Associates, Inc.

Hourly Noise Levels
1013 Lassen Avenue

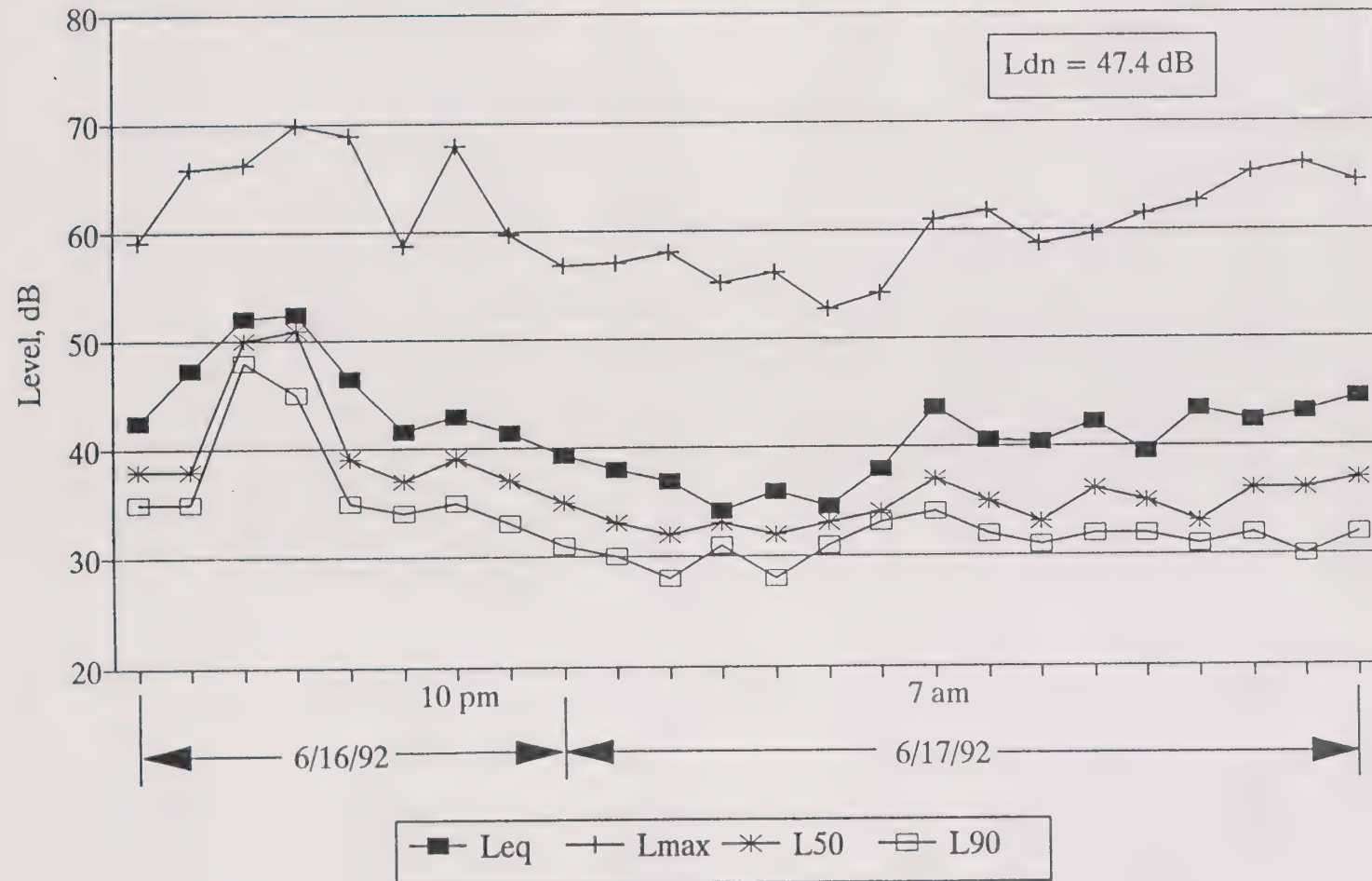


FIGURE 2

BBA



COMMUNITY GOALS

The following goals have been used as a guideline in the preparation of this Element:

1. *TO PROTECT THE CITIZENS OF THE CITY FROM THE HARMFUL AND ANNOYING EFFECTS OF EXPOSURE TO EXCESSIVE NOISE.*
2. *TO PROTECT THE ECONOMIC BASE OF THE CITY BY PREVENTING INCOMPATIBLE LAND USES FROM ENCROACHING UPON EXISTING OR PLANNED NOISE-PRODUCING USES.*
3. *TO PRESERVE THE TRANQUILITY OF RESIDENTIAL AREAS BY PREVENTING NOISE-PRODUCING USES FROM ENCROACHING UPON EXISTING OR PLANNED NOISE-SENSITIVE USES.*
4. *TO EDUCATE THE CITIZENS OF THE CITY CONCERNING THE EFFECTS OF EXPOSURE TO EXCESSIVE NOISE AND THE METHODS AVAILABLE FOR MINIMIZING SUCH EXPOSURE.*

THE PLAN

This portion of the Element establishes policies and implementing action programs that will implement the Noise Element's goals - to protect the citizens of Avenal from harmful effects of excessive noise.

The first part is the statement of policies that will guide future decisions regarding these issues. The second part of the Plan is the Action program. These programs will serve to implement the policies. For example, the action program will provide a framework for reviewing developments that may be located in area especially sensitive to noise hazards. The action program focuses on the prevention of new noise-related land use conflicts by requiring that new development be reviewed to determine whether it complies with the policies.

Transportation Noise Sources

1. New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected future levels of noise from transportation noise sources which exceed 60 dB Ldn in outdoor activity areas and 45 dB Ldn in interior spaces.



Action - The City shall review new public and private development proposals to determine conformance with the policies of this Noise Element.

Action - Where the development of a project may result in land uses being exposed to existing or projected future noise levels exceeding the levels specified by the policies of the Noise Element, the City shall require an acoustical analysis early in the review process so that noise mitigation may be included in the project design. For development not subject to environmental review, the requirements for an acoustical analysis shall be implemented prior to the issuance of a building permit. The requirements for the content of an acoustical analysis are given in Appendix B.

2. Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed 60 dB Ldn within the outdoor activity areas and 45 dB Ldn in interior spaces of existing noise sensitive land uses.

Action - The City shall develop and employ procedures to monitor compliance with the policies of the Noise Element after completion of projects where noise mitigation measures have been required.

Action - The City shall request the California Highway Patrol, the sheriff's office and the police department to actively enforce the California Vehicle Code sections relating to adequate vehicle mufflers and modified exhaust systems.

Stationary Noise Sources

3. New development of noise-sensitive land uses shall not be permitted where the noise level from existing stationary noise sources exceeds the noise level standards of Table 13.

Action - The City shall not permit projects that exceed allowable decibel levels established by this Element.

Action - The City shall enforce the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC) concerning interior noise exposure for multi-family housing, hotels and motels.



TABLE 13

MAXIMUM ALLOWABLE NOISE EXPOSURE-STATIONARY NOISE SOURCES¹

	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq} , dB	50	45
Maximum level, dB	70	65

¹As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.

4. Noise created by new proposed stationary noise sources or existing stationary noise sources which undergo modifications that may increase noise levels shall be mitigated so as not to exceed the noise level standards of Table 13 on lands designated for noise-sensitive uses. This policy does not apply to noise levels associated with agricultural operations.

Action - The City shall develop and employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the development review and building permit processes.

Action - The City shall periodically review and update the Noise Element to ensure that noise exposure information and specific policies are consistent with changing conditions within the City and with noise control regulations or policies enacted after the adoption of this element.



APPENDIX A

NOISE AND ITS EFFECTS ON PEOPLE

Fundamentals of Noise Assessment:

Noise is often defined simply as unwanted sound, and thus is a subjective reaction to characteristics of a physical phenomenon. The descriptors of community noise in current use are the results of many years of effort to translate objective measurements of sound into measures of subjective reaction to noise. Before elaborating on these descriptors, it is useful to discuss some fundamental concepts of sound.

Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, now called Hertz (Hz) by international agreement.

The speed of sound in air is approximately 770 miles per hour, or 1,130 feet/second. Knowing the speed and frequency of a sound, one may calculate its wavelength, the physical distance in air from one compression of the atmosphere to the next. An understanding of wavelength is useful in evaluating the effectiveness of physical noise control devices such as mufflers or barriers, which depend upon either absorbing or blocking sound waves to reduce sound levels.

To measure sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised.

The decibel scale uses the hearing threshold as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. Use of the decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. In the range of usual environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighting the frequency response of a sound level measurement device (called a sound level meter) by means of the standardized A-weighting network. There is a



strong correlation between A-weighted sound levels and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. Figure A-1 illustrates typical A-weighted sound levels due to recognizable sources.

It is common to describe community noise in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which is the sound level corresponding to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors such as Ldn and CNEL, and shows very good correlation with community response to noise.

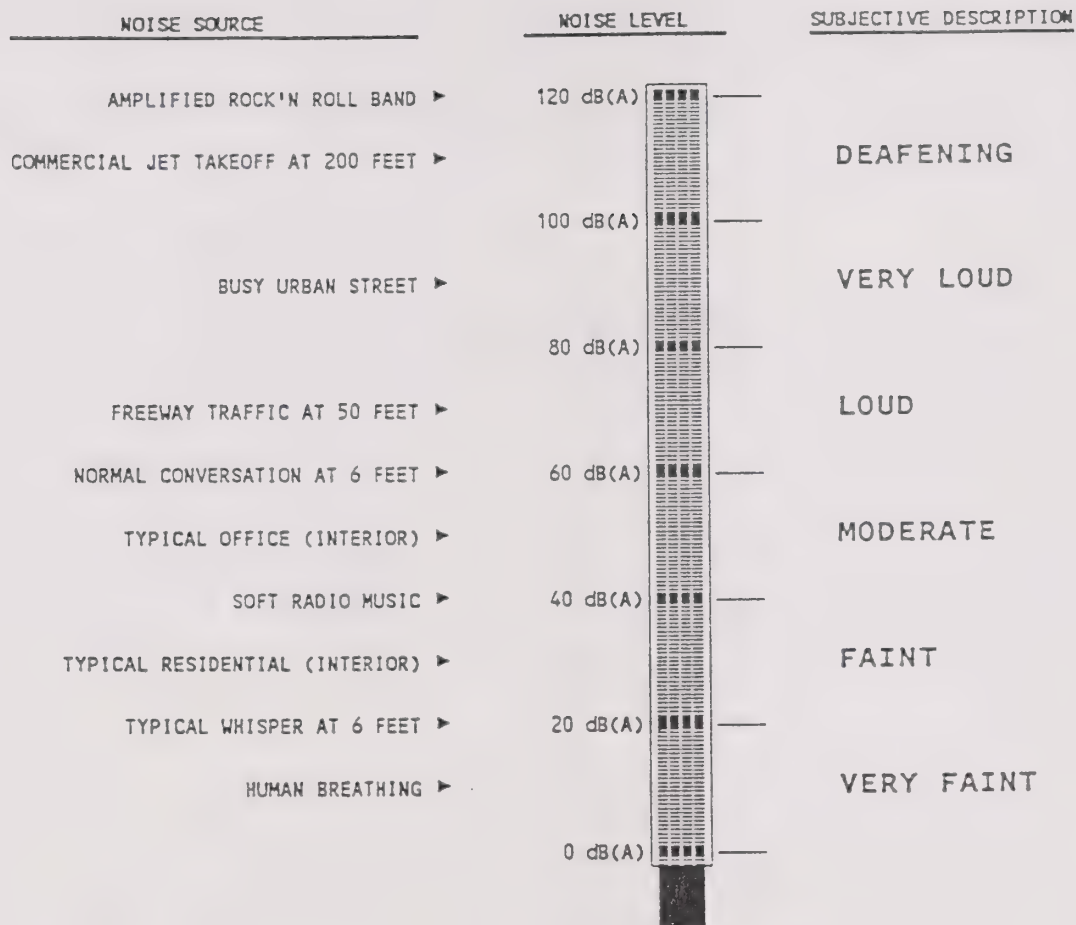
Two composite noise descriptors are in common use today: Ldn and CNEL. The Ldn (day- night average level) is based upon the average hourly L_{eq} over a 24-hour day, with a +10 decibel weighting applied to nighttime (10:00 p.m. to 7:00 a.m.) L_{eq} values. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were subjectively twice as loud as daytime exposures. The CNEL (Community Noise Equivalent Level), like Ldn, is also based upon the weighted average hourly L_{eq} over a 24-hour day, except that an additional 4.77 decibel penalty is applied to evening (7:00 p.m. to 10:00 p.m.) hourly L_{eq} values.

The CNEL was developed for the California Airport Noise Regulations, and is applied specifically to airport/aircraft noise assessment. The Ldn scale is a simplification of the CNEL concept, but the two will usually agree, for a given situation, within 1 dB. Like the L_{eq} , these descriptors are also averages and tend to disguise variations in the noise environment. Because Ldn and CNEL presume increased evening or nighttime sensitivity, they are best applied as criteria for land uses where nighttime noise exposures are critical to the acceptability of the noise environment, such as residential developments.

Noise in the community has often been cited as being a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from the interference with human activities such as sleep, speech, recreation, and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, and the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being is the basis for land use planning policies directed towards the prevention of exposure to excessive community noise levels. There are also economic affects of community noise: reduction in property values, inefficiency in the workplace and lost hours due to stress.

Figure A-1

EXAMPLES OF NOISE LEVELS





To control noise from existing fixed sources, many jurisdictions have adopted community noise control ordinances. Such ordinances are intended to abate noise nuisances and to control noise from existing sources. They may also be used as planning tools if applied to the potential creation of a nuisance, or to potential encroachment of sensitive uses upon noise-producing facilities. Community noise control ordinances are generally designed to resolve noise problems on a short-term basis (usually by means of hourly noise level criteria), rather than on the basis of 24-hour or annual cumulative noise exposures.

Criteria for Acceptable Noise Exposure:

The Guidelines for the Preparation and Content of the Noise Element of the General Plan (Reference 1), includes recommendations for exterior and interior noise level standards to be used by local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The State Guidelines contain a land use compatibility table which describes the compatibility of different land uses with a range of environmental noise levels in terms of Ldn or CNEL. An exterior noise environment of 50 to 60 dB Ldn or CNEL is considered to be "normally acceptable" for residential uses according to those guidelines. The recommendations in the State Guidelines also note that, under certain conditions, more restrictive standards may be appropriate. As an example, the standards for quiet suburban and rural communities may be reduced by 5 to 10 dB to reflect lower existing outdoor noise levels.

The U.S. Environmental Protection Agency (EPA) also prepared guidelines for community noise exposure in the publication Information on the Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Reference 2). These guidelines are based upon assumptions regarding acceptable noise levels which consider occupational noise exposure as well as noise exposure in the home. The guidelines recognize an exterior noise level of 55 dB Ldn as a goal to protect the public from hearing loss, activity interference, sleep disturbance and annoyance. The EPA notes, however, that this level is not a regulatory goal, but is a level defined by a negotiated scientific consensus without concern for economic and technological feasibility or the needs and desires of any particular community. The EPA and other governmental agencies have adopted suggested land use compatibility guidelines which indicate that residential noise exposures of 55 to 65 dB Ldn are within acceptable limits.

For control of noise nuisances, a community noise control ordinance is the most appropriate tool. The State Office of Noise Control has prepared a Model Community Noise Control Ordinance (Reference 3) which contains recommended noise standards in terms of "time-weighted" sound levels. The time-weighting concept allows discrimination of both short- and long-term noise exposures, and



sets allowable levels for each. The Model recommends more stringent standards for residential land uses than for commercial and industrial, with the most stringent standards recommended for "rural suburban" situations. The primary exterior noise standard for rural residential uses is 50 dB in the daytime hours (7 a.m. to 10 p.m.), and 40 dB at night. The standard is expressed in terms of the level exceeded for 30 minutes of an hour, equivalent to the median level, or L50. This ordinance format is successfully applied in many California cities and counties.

The U.S. Environmental Protection Agency has also prepared a Model Community Noise Control Ordinance (Reference 4), using the "Equivalent A-weighted Sound Level" (Leq) as the means of defining allowable noise level limits. The EPA model contains no specific recommendations for local noise level standards, but reports a range of Leq values as adopted by various local jurisdictions. The mean daytime noise standard reported by the EPA is 56.75 dB (Leq); the mean nighttime noise standard is 51.76 dB (Leq). This ordinance format has been successfully applied by the City and County of San Diego and by many other jurisdictions looking for a simplified approach to the enforcement of a local noise control ordinance.

In addition to the A-weighted noise level, other factors should be considered in establishing criteria for noise sensitive land uses. For example, sounds with noticeable tonal content such as whistles, horns, or droning or high-pitched sounds may be more annoying than the A-weighted sound level alone will suggest. Many noise standards apply a penalty, or correction, of 5 dB to such sounds. The effects of unusual tonal content will generally be more of a concern at nighttime, when residents may notice the sound in contrast to previously-experienced background noise.

Because many rural residential areas experience very low noise levels, residents may express concern about the loss of "peace and quiet" due to the introduction of a sound which was not audible previously. In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and the relative loss of "peace and quiet" is the inevitable result of land use or activity changes in such areas. Audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning and environmental review processes.

Table A-1 is commonly used to show expected public reaction to changes in environmental noise levels. This table was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise, or to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dB, the usual range of voice and interior noise levels. It is probably not directly applicable to public perception of identifiable intrusive noise sources in very quiet environments because of the difference in frequency



content between background noise sources and intrusive sounds, as well as the fact that the absolute amount of energy required to make a given change in sound pressure level is much smaller at low noise levels than at higher levels. Table A-1 should therefore only be applied in a general manner to show the relationship between changes in sound energy, sound pressure levels and subjective reaction.

The comparisons of subjective reaction outlined in Table A-1 are not applicable to noise exposures which are very quiet or very loud. For example, a whisper which is increased by 10 decibels, e.g., from 20 dB to 30 dB, remains a whisper, and would still be described as quiet. In contrast, an increase in the noise level of a diesel locomotive from 90 dB to 100 dB would be a change from a loud noise to a very loud noise. Thus the subjective reaction to a 10 dB change in either case may be different, even though the change in level is the same.

TABLE A-1

SUBJECTIVE REACTION TO CHANGES IN NOISE LEVELS OF SIMILAR SOURCES

Increase in Sound Pressure Level, dB	Relative Increase in Acoustical Energy	Subjective Reaction
1	1.26 times	Minimum Detectable Change (Lab)
3	2.0 times	Usually Noticeable Change
5	3.2 times	Definitely Noticeable Change
10	10.0 times	Twice as Loud as Before

Sources: Various, reported by Brown-Buntin Associates, Inc.



REFERENCES

1. California Department of Health Services, Guidelines for the Preparation and Content of the Noise Elements of the General Plan, 1990 (included in the 1990 State of California General Plan Guidelines, State Office of Planning and Research).
 2. U.S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March, 1974.
 3. California Department of Health, Office of Noise Control, Model Community Noise Control Ordinance, April, 1977.
 4. U.S. Environmental Protection Agency, Model Community Noise Control Ordinance, September, 1975.
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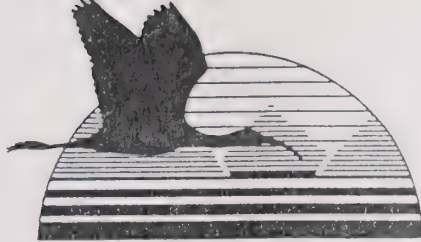


APPENDIX B

REQUIREMENTS FOR AN ACOUSTICAL ANALYSIS

An acoustical analysis prepared pursuant to the Noise Element shall:

- A. Be the financial responsibility of the applicant.
 - B. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
 - C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions. Where actual field measurements cannot be conducted, all sources of information used for calculation purposes shall be fully described. When the use being studied is a commercial use, all noise sources related to the service and maintenance of the facility shall be considered, including parking lot and landscape maintenance, refuse collection and truck loading/unloading activities.
 - D. Estimate existing and projected (20 years) noise levels and compare those levels to the adopted policies of the Noise Element. Projected future noise levels shall take into account noise from planned streets, highways and road connections.
 - E. Recommend appropriate mitigation to achieve compliance with the adopted policies of the Noise Element, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses.
 - F. Estimate noise exposure after the prescribed mitigation measures have been implemented.
 - G. Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.
-



HANSEN'S
BIOLOGICAL
CONSULTING

Robert B. Hansen, M.S. Environmental Biology

ADDENDUM TO THE

BIOLOGICAL ASSESSMENT OF SENSITIVE SPECIES STATUS

FOR THE

CITY OF AVENAL PROPOSED OFF-HIGHWAY VEHICLE PARK,

KINGS COUNTY (HANSEN 1989).

FOR THE

AVENAL GENERAL PLAN UPDATE/EIR

JULY 1992

I. Introduction

This is an addendum to an existing report, Biological Assessment of Sensitive Species Status for the City of Avenal Proposed Off Highway Vehicle Park, Kings County (Hansen's Biological Consulting 1989), which was published in October 1989. The original report was the result of 233 hours of field work conducted by four biologists between 9 June and 29 August 1989 in portions of sections 4, 10, and 15 in T22S, R17E on the Avenal and La Cima, California 7.5 Minute Series USGS Quad Maps.

This addendum, an update of the 1989 report, is included to provide information on the status of sensitive species in portions of Sections 15, 16 and 22. These lands, not surveyed in the original survey, are part of the expanded City of Avenal Urban Area Boundary as proposed in the Avenal General Plan Update/EIR.

The information for this addendum was gathered by Robert Hansen and Steve Feserman between 0730 and 1515 hours during a field visit to Sections 16 and 22 on 13 June 1992. Additional records of sensitive species status from lands within the proposed Urban Area Boundary are the result of field work and literature review that were conducted as part of the Pleasant Valley (Coalinga, Fresno County environs) Habitat Conservation Plan (Jean Hopkins & Associates, Inc., in preparation).

II. Location of Lands Covered during Field Survey

The area covered during the 13 June 1992 field survey includes approximately 400 acres of land in the SE/4 of Section 15 (The City of Avenal landfill site), the NE/4 of Section 16, and the NE/4 of Section 22 (north and east of Hydril Road). The land covered by the two field biologists during the survey consisted primarily of uncultivated hilly terrain.

III. Survey Methods

Meandering transects were walked to locate potential San Joaquin kit fox (Vulpes macrotis mutica) dens and to identify suitable habitat for blunt-nosed leopard lizard (Gambelia silus) and other sensitive species. An attempt was made to visually cover all of the uncultivated land with the areas described above but the survey focused chiefly on lands in Sections 16 and 22. It should be noted that the field biologists were unable to conduct transects on the eastern portion of the NE/4 of Section 16.

Survey methodologies employed during this biological survey were less intensive than investigations which are required to satisfy guidelines for full-scale Biological Assessments as recommended by United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG). This means that no spotlighting or scent station work was conducted and that the transects, rather than being spaced at regular 50-100 foot intervals, were meandering transects that followed ridge lines, washes, and other terrain features to maximize (in a short period of time) the likelihood of finding evidence of key sensitive species presence.

IV. Environmental Setting

A. Soils and Exposure

Soils in the hilly portions of Sections 15, 16, and 22 are similar to those that were covered in the 1989 survey. Elevation in the June 1992 survey area ranges from approximately 860 feet to 1,060 feet creating a topography of small ridges and arroyos that drain from NNE to SSW. The land in Section 16 is more gently rolling compared to the steeper terrain in Sections 15 and 22.

B. Plant Communities

Most of the land that was surveyed on 13 June 1992 can be classified as Non-native Grassland. Some live saltbush (Atriplex polycarpa) shrubs are still present, especially on land in Section 15. This indicates that much of the area was originally a native shrub community called Interior Coast Range Saltbush Scrub but that most of the original community has been type-converted to Non-native grassland by a combination of grazing and periodic range fires. Detailed characteristics of these plant communities are included in the report from the 1989 survey.

V. Results

A. Common Plant Species

The following common plant species, seen during the 13 June 1992 field survey, are additions to the check list of native and introduced plants (Appendix A) that was compiled during the summer 1989 field surveys: owl's clover (Orthocarpus purpurascens), hillside daisy (Monolopia lanceolata), Common groundsel (Senecio vulgaris), common brodiaea (Dichelostemma pulchellum), and Arabian schismus (Schismus arabicus).

B. Sensitive Plant Species

No sensitive plant species were found during the 13 June 1992 field survey but it should be kept in mind that the survey was conducted too late in the year to expect to find either Hoover's woolly-star (Eriastrum hooveri) or San Joaquin woolly threads (Lembertia congdonii) in flower. Surveys conducted as part of the Pleasant Valley HCP did locate populations of both species in the Kettleman Hills in the vicinity of Avenal. A small population of Hoover's woolly-star was discovered in the SW/4 of the NW/4 of Section 27 (T21S, R 17E) on 3 June 1991 one mile west of where Skyline Boulevard enters Kings County (just inside Fresno County). Six populations of San Joaquin woolly threads were located during May and June 1991 on five sections of land in the Kettleman Hills of Fresno County just one to two miles from the Kings County line. The presence of these two sensitive plant species in nearby portions of the Kettleman Hills (on soil types similar to those in the survey area) suggests that these species may be present in the immediate vicinity of Avenal.

C. Common Animal Species

The following common animal species, seen during the 13 June 1992 field survey, are additions to the check list of native and introduced vertebrates (Appendix B) that was compiled during the summer 1989 field surveys: cliff swallow (Hirundo pyrrhonota), barn swallow (Hirundo rustica), Bewick's wren (Thryomanes bewickii), and Brewer's blackbird (Euphagus cyanocephalus).

D. Sensitive Animal Species

A blunt-nosed leopard lizard (unknown sex) was seen near the center of Section 16 (0.2 miles north of Sonoma Street on First Avenue) on 13 June 1992. This location is in the NE/4 of the SW/4 of Section 16, T22S, R16E and is only 0.1 miles north of the end of the paved portion of First Avenue. Rob Hansen and Steve Fesperman watched the lizard as it moved across a 50-foot wide sandy wash at the edge of a dry grain field. This wash is not a natural arroyo; rather it appears to be an outwash area where water drained off the grainfield west of First Avenue. The lizard was first seen about 10 feet out in the harvested grain field. It ran from there to the cover of Russian thistle (Salsola iberica) at the edge of the sandy wash. This leopard lizard was approximately 10.5 inches long and was abroad on an unusually cool June day; it was approximately 74 degrees Fahrenheit during the time of our lizard observation (from 1425 to 1445 hours).

Potential kit fox dens (dens large enough to admit a kit fox but which showed no other kit fox sign) were noted in the hills in Section 16 but no positive evidence of San Joaquin kit fox or other sensitive animal species was found during the 13 June 1992 field survey.

VI. Discussion of Survey Results

Even though the grassland habitat in the survey area has been impacted by cattle grazing, San Joaquin kit fox prey species (jack rabbits, cottontails, ground squirrels, kangaroo rats, mice, and gophers) are present and there are a few potential kit fox dens. Although no known dens of San Joaquin kit fox were found on any of the meandering transect survey walkovers in Section 15, 16, or 22, the key habitat components noted above, prey and cover, offer foraging opportunities for San Joaquin kit fox on the project site. Kit foxes are known to forage in the immediate vicinity of the entire survey area (Hansen's Biological Consulting 1989).

Although leopard lizards could potentially occur on any of the relatively level open ground (arroyos and washes between ridges) within the survey area, the specific location where the leopard lizard was actually observed was the most suitable site located during the survey. It was on the sandiest, most open (very little ground cover vegetation) wash seen all day. Several small mammal burrows (including kangaroo rat precincts) are distributed across the survey area. Where leopard lizards are present, these burrows are an important habitat component that provide underground breeding chambers and valuable escape cover.

Because a leopard lizards has been observed in the survey area, because kit foxes are so wide-ranging in the vicinity of the survey area, and because the entire survey area qualifies as potential habitat for both species, it would be prudent to conduct thorough Biological Assessments (as recommended by USFWS and CDFG) for these species whenever a proposed project has the potential to impact uncultivated ground in Sections 15, 16, and 22.

The combination of appropriate soils, terrain, and vegetation may still offer suitable habitat for sensitive plant species within the survey area as well. In light of the information provided on sensitive plant species, it would be prudent to conduct Biological Assessments during the appropriate flowering season for these species whenever a proposed project has the potential to impact uncultivated ground in Sections 15, 16, and 22.



SECTION 2

EXISTING
CONDITIONS



SECTION 2 EXISTING CONDITIONS

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CHAPTER

1

HUMAN ENVIRONMENT





CHAPTER 1 • HUMAN ENVIRONMENT

A. HISTORY

The townsite of Avenal was founded as a result of oil being discovered in the adjacent Kettleman Hills. The first well was drilled in the early 1900s but the "oil boom" did not begin until the late 1920s when Elliot Well No. 1 began to produce oil in 1928. At the time, it was the deepest and most expensive well drilled in the United States. It was during the 20s that both Avenal and Coalinga began to take on the appearance of towns - transitioning from tents to wooden buildings.

Standard Oil, which named Avenal (Spanish for oat field), surveyed and laid out the townsite in 1929. During this time, vast tracts of land around Avenal were purchased from the railroads by Standard Oil. Besides the Kettleman Dome Field, other oil fields were also brought into production, including Pyramid Hills, Dudley Ridge, and the Alpaugh-Hanford areas. In addition, surrounding hills yielded mineral resources, such as chromite, fuller's earth, gypsum and quicksilver. The mining of these resources and the oil and gas production stimulated the economy of Kings County and helped it to become more diversified.

Until the 1950s Avenal was a town of oil workers and their families. In fact, in 1940, Avenal had a population of 4,600 persons, which made it the second largest city in Kings County. In the 1950s, as a result of salt water intrusion into the oil fields, oil and gas production began to decline. In 1953, oil companies in the region assigned Standard Oil to operate the field as one unit. It was during this period that Avenal began to experience a decline in population and economic stability.

In the 1970s, two major public works projects were completed - the California Aqueduct and Interstate 5. One brought water, which helped the west side to flourish in the production of field crops and orchards, and the other brought access to a high-speed highway that linked northern and southern California.

With the California Aqueduct and the crops it supported, came the need for farm labor. It was during this decade that Avenal began to shift from an oil-based economy to one that was agricultural in nature.



In 1979, Avenal, which had a population of about 3,655, incorporated. As a result of incorporation, a number of significant changes occurred in Avenal. The most significant was the construction of Avenal State Prison by the State Department of Corrections in 1987. Currently, this prison houses 4200 prisoners and employs 1100 people. As part of this prison project, new water pumping/filtration and waste water treatment plants were constructed. These public works projects serve both the City of Avenal and the Avenal State Prison.

In 1990 the population of Avenal had increased to 5,455. This figure did not include the prison population. In 1991, through a city-wide assessment district, curbs, gutters and sidewalks were installed throughout the community.

B. POPULATION

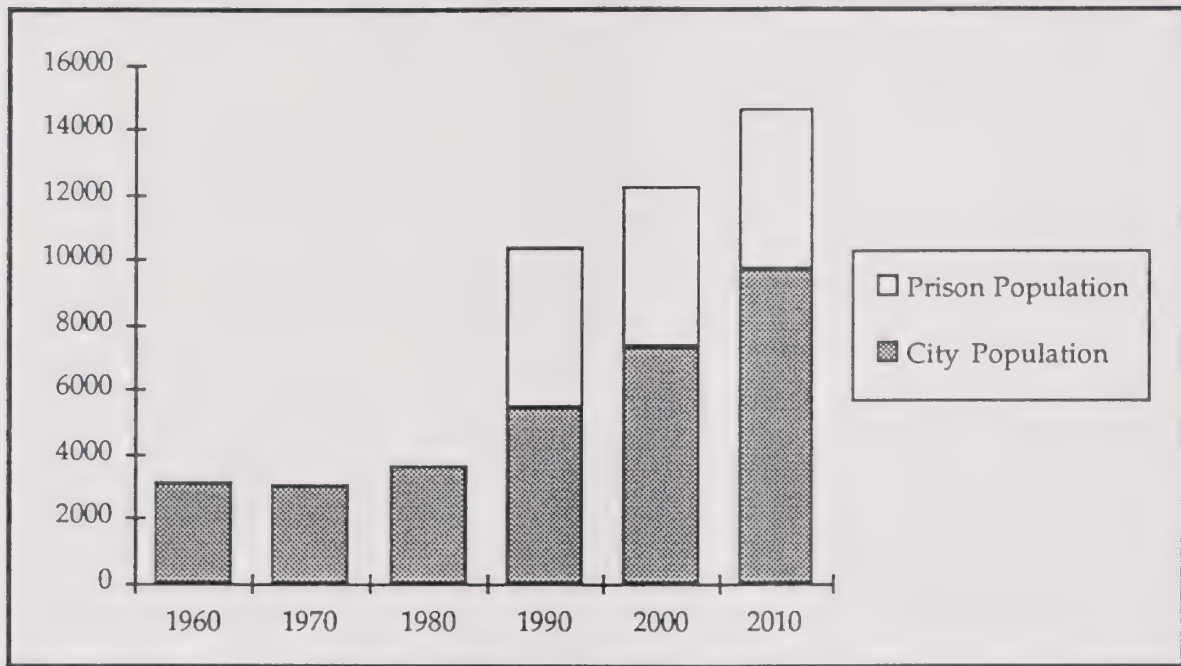
The City of Avenal was incorporated in 1979. At that time the population was 3,655. Since then the City has undergone several changes, some of which have caused the City to experience an erratic growth pattern. These changes include a downturn in the oil and gas industries and the construction of the Avenal State Prison in 1987. The growth rate has been as high as 20% in 1987 and actually declined in 1982. The growth rate for the last six years, with the exception of 1987 (the year the prison opened), has remained fairly stable.

For purposes of this document, the growth rate used for population projections is 2.8%, which is the average annual growth rate from 1986 through 1991, excluding 1987. The growth rate from 1987 to 1988, without including the prison population, was unusually high - approximately 20%. The high growth rate is attributed to the influx of prison employees and their families. Although the 20 percent figure is high compared to other years, the City had anticipated a much higher growth rate, due to employees moving into the City. Presently, only about 16 to 18 percent of the prison employees live in Avenal.

Figure No. 1 provides population trends and projections. Although the prison almost doubled the City's population in 1987, it is not expected to grow in the future. In fact, the Prison has recently indicated that the overall population is expected to decrease. At one time, the Prison had planned to expand its facilities; however, the current position of the prison administration is that expansion will not occur in the near future.



Figure No. 1
Population, 1960 -2010



Source: City of Avenal 1984 Housing Element, 1990 U.S. Census, and projections based on a 2.8% growth rate, Collins & Associates, 1992.

C. SOCIOECONOMIC CONDITIONS

Income

In 1980, the median family income for Avenal was \$14,871, which is slightly lower than the figure for Kings County overall. It was 69% of the median income for California. Table No. 1 provides a comparison of median family income for Avenal, Kings County and the State of California.



Table No. 1
Median Family Income, 1980

	Median Family Income 1/1/80	Median Family Income as % of State Median
Avenal	\$14,871	69%
Kings County	\$16,164	75%
California	\$21,541	100%

Source: U. S. Census, 1980

Retail Sales

Taxable retail sales in a city are a measure of its economic vitality. One percentage point of the six percent sales tax is retained by the City in which the sale takes place. Taxable retail sales generated for Avenal increased by 12.6 percent from 1980 through 1989. When inflation is taken into account, Avenal showed a net decline in sales tax revenues. Table No. 2 shows that the presence of the prison in 1987, 1988, and 1989 had no impact on Avenal's ability to increase taxable retail sales.

Table No. 2
Taxable Retail Sales in Avenal

Year	Taxable Retail Sales (\$ thou)	Per Capita Tax	Pull Factor*
1980	6,956	\$16.81	0.42
1981	6,145	\$14.77	0.35
1982	5,832	\$13.85	0.34
1983	6,058	\$14.39	0.32
1984	6,582	\$13.67	0.28
1985	6,191	\$13.80	0.27
1986	5,995	\$13.37	0.25
1987	7,365	\$12.89	0.24
1988	7,747	\$11.71	0.20
1989	7,830	\$11.23	0.19

*The "Pull Factor" is the city's per capita sales tax divided by the per capita State figure.
Source: Analytics, "The Economic Impacts of State Prisons in Kings County", 1990.



Ethnicity

The City of Avenal is predominantly a White and Hispanic community. Table No. 3 shows the ethnic breakdown of the community.

Table No. 3
Ethnicity, City of Avenal

	White	Hispanic	Black	Other
Percent	59.1%	40.5%	0.3%	0.1%

Source: U.S. Bureau of Census, 1980.

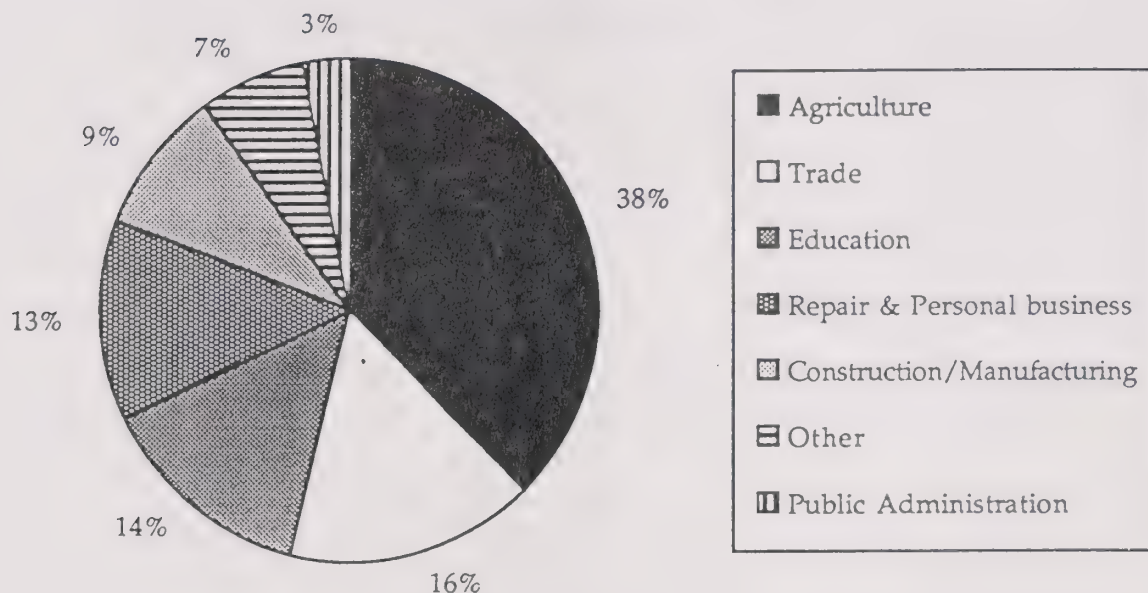
According to 1990 Census information, the ethnic composition of the community has changed considerably since 1980. In 1990, the percentage of Afro-Americans was quite high due to the ethnic composition of the prison. The prison has an overall population of 4,832, of which, 29.9 percent is Afro-American. In 1980, Afro-Americans only made up .3 percent of the City's population. The 1980 Census data for ethnicity is; therefore, more representative of the community at large than the 1990 data, which includes the prison population.

Employment

The City of Avenal is predominantly an agricultural community. The City was originally built around the oil/gas production and distribution industry. As oil and gas productions have decreased significantly in the last few years, agriculture has become one of the main employers in the area. Figure No. 2 provides 1980 Census employment information.



Figure No. 2
Employment by Industry, 1980



Source: U.S. Census Bureau, 1980

Currently, the major employer in Avenal is the Avenal State Prison. The State Prison opened in 1987 and currently employs approximately 1,057 persons. Table No. 4 lists the current major employers in Avenal.



Table No. 4
Major Employers in Avenal

NAME OF BUSINESS	PRODUCT/SERVICE	NO. OF EMPLOYEES
Avenal State Prison	Correctional facility	1057
Reef-Sunset Unified School Dist	Education	225
Pacific, Gas & Electric	Compressor Station	65
Avenal District Hospital	Health care	60
State Market	Grocery store	30
Chevron - USA, Inc.	Gas and oil	25
City of Avenal	Government	19
Keenan Farms	Pistachios/almonds	20 - 180
Creekside Inn	Motel/restaurant	10
Ardo's Restaurant	Restaurant	10
Halliburton Service	Oil Field Service	9
Elliot Construction	Construction	2 - 10
Kings Credit Union	Banking	3
T&T Market	Grocery store	3

Source: Collins & Associates, 1992

D. HOUSING

Type

The total number of housing units increased by 366 units from 1980 through 1990. The number of single-family units actually decreased, while both the number of multi-family and mobilehome units increased. The decrease in single-family units is attributed to demolitions and inaccurate counts by the Census Bureau. The increase in the percentage of multi-family units and mobilehomes is consistent with similar increases statewide.



Table No. 5
Total Number of Units by Type

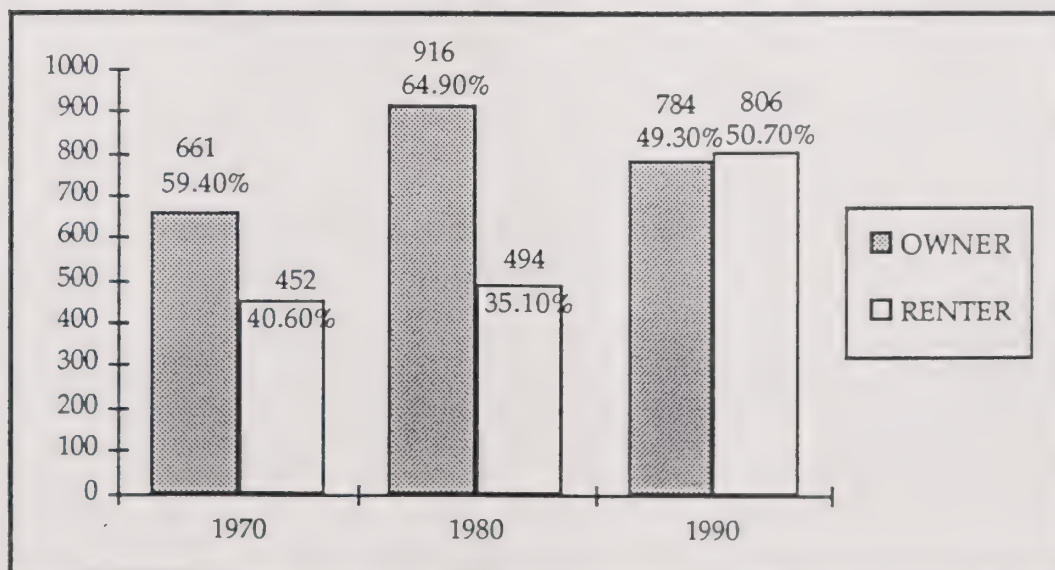
	1980	1990
Single-family	1191	1156
Multi-family	165	482
Mobilehomes	54	138
Total:	1410	1776

Source: U.S. Census, 1980, 1990.

Tenure

Since 1970, a significant change in housing tenure has occurred in Avenal. The number of renters has increased from 35% in 1980 to almost 51% in 1990. This change is consistent with a statewide trend of decreasing homeownership. In Avenal this trend was affected by the construction of the Westview Apartments (150 units). Figure No. 3 illustrates the changing percentages in housing tenure from 1970 through 1990.

Figure No. 3
Housing Tenure, 1970-1990



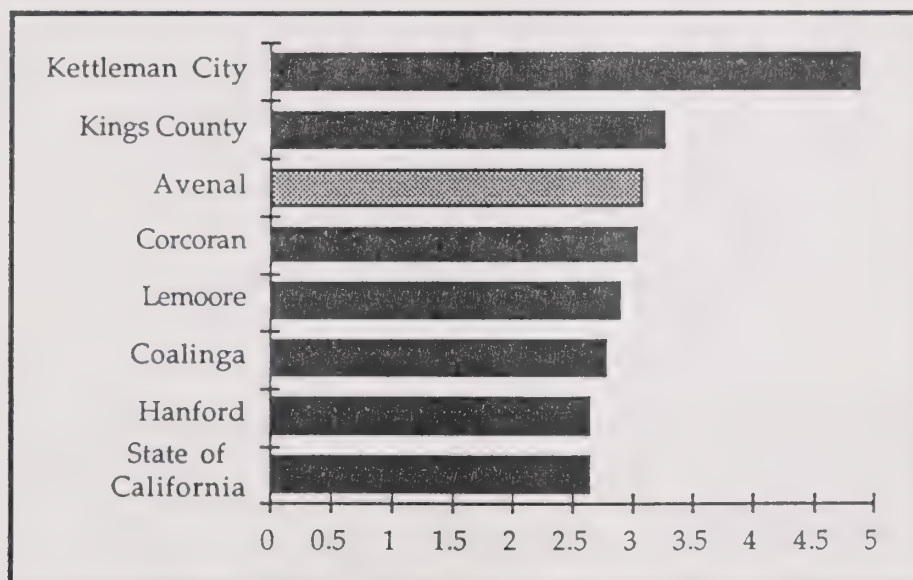
Source: U.S. Census Bureau, 1970, 1980, and 1990



Overcrowding

Overcrowding of residential structures does not appear to be a problem in Avenal. Avenal averages 3.1 persons per unit which is comparable to the Kings County average of 3.29 persons per unit. Figure No. 4 compares the average number of persons per unit for different communities in the area.

Figure No. 4
Persons per Housing Unit



Source: U.S. Census Bureau, 1992

Vacancy

The City of Avenal is currently experiencing a high vacancy rate. One reason for this, is that prison employees have been unwilling to live in Avenal.

Just prior to the construction of the prison, land prices soared. Avenal added 214 dwelling units to its housing stock from 1987 to 1988. However, due to the lack of demand, land prices fell to pre-prison levels. Many of the new homes and apartments were left vacant.



Table No. 6
Vacancy Rate, 1980 & 1990

	1980	1990
Armona	3.42	3.48
Avenal	7.02	10.47
Corcoran	3.95	6.67
Hanford	7.90	6.50
Kettleman City	14.39	1.38
Lemoore	7.08	4.52
Stratford	3.95	1.29
Kings County	8.54	5.71

Source: 1992 Avenal Draft Housing Element

The Prison Environmental Impact Report (1984) prepared for the construction of the prison, indicated that as many as 243 employees could be purchasing homes and 207 could be renting. The EIR indicated that it could not predict where those persons would choose to live. In actuality, fewer than expected persons chose to live in Avenal. The principal reasons were:

1. Avenal's perceived isolation,
2. lack of amenities,
3. few employment opportunities for spouses, and

Housing Starts

Table No. 7 shows the number of housing additions from 1980 through 1992. The year of the highest housing starts was 1987, the year the prison was completed.



Table No. 7
Housing Construction, 1980-1991

Year	Single-family	Multi-family	Mobilehomes	Total
1980	3	0	6	6
1981	17	0	7	27
1982	3	0	3	6
1983	1	40	7	48
1984	1	11	3	15
1985	-5	59	1	55
1986	-14	25	20	31
1987	25	198	-9	214
1988	15	32	0	47
1989	17	0	5	22
1990	4	0	1	5
1991	33	0	2	35

Source: City of Avenal, 1992

E. SERVICES

Fire Protection

Fire protection is provided by the Kings County Fire Department augmented with a local volunteer force. The County maintains a station house in Avenal with two professional fire fighters on duty 24-hours per day. The fire station maintains four engines and two squad trucks. The County also has a two-man station in Kettleman City, fifteen miles east of Avenal.

In addition, the County Fire Department works closely with California Department of Forestry (CDF) and the Avenal State Prison Fire Department. The County and CDF have a "dual responsibility" area west of State Highway 33. This means that they will both respond to fires in that area. The Avenal State prison maintains its own fire department at the prison site. The County indicated that they have a mutual aid agreement with the prison for fire services. The prison fire department works closely with the Kings County fire department and responds to almost all fires in the area. Although, the Departments work closely together, the prison department can not be relied on for response to all emergencies. For security



reasons, it is unusual for the County to assist with fires at the prison.

The County Fire Department indicated that grass and brush fires occur, on the average, twenty times per year. These typically occur in areas where onsite water is not available. In these cases, the fire crews fight most grass blazes by starting a "back-burn" fire in the path of the blaze. The two fires are expected to burn themselves out when they meet. Within the urbanized area, onsite water is available for fire use. The County stated that water pressure and quantity within Avenal have been sufficient to meet the demand during fires.

The Kings County Fire Department indicated that all of the urbanized area of Avenal falls within a 3-minute response time (see Exhibit No. 1). However, a portion of the city limits area is outside a 5-minute response time. The area near Interstate 5 is an "uphill pull" from the existing station. This area is about 8 to 12 minutes from the station.

Since the construction of the prison in 1987, the Fire Department has noticed a significant increase in the number of emergency calls, especially for medical aid. Although the actual city population has not increased as much as anticipated, the number of vehicles traveling to and from Avenal did. This would include prison employees traveling to and from work and prison visitors. This has increased the number of motor vehicle accidents and medical aid calls to which the Fire Department responds. For instance, in 1985 the Department responded to 222 emergency calls. In 1991, total responses were up to 361. Although the number of responses has increased, no additional fireman have been hired.

Police Protection

The Kings County Sheriff's Office provides police services to the City of Avenal. The County maintains a substation in the community that is staffed with one lieutenant, nine deputies, and two sergeants. At a minimum, there is one deputy on call 24-hours per day.

Avenal has a Justice Court and one court holding cell used only when the court is in session. The Court is in session every Friday. All arrested persons are transported to Kings County jail in Hanford, which is approximately 45 minutes away. Nearby Coalinga, in Fresno County, presently has 13 law enforcement officers in their City Police Department. Coalinga maintains a 3-cell jail with a capacity of six inmates. The Sheriff's Department maintains a close working relationship with the police departments in Coalinga and Huron.

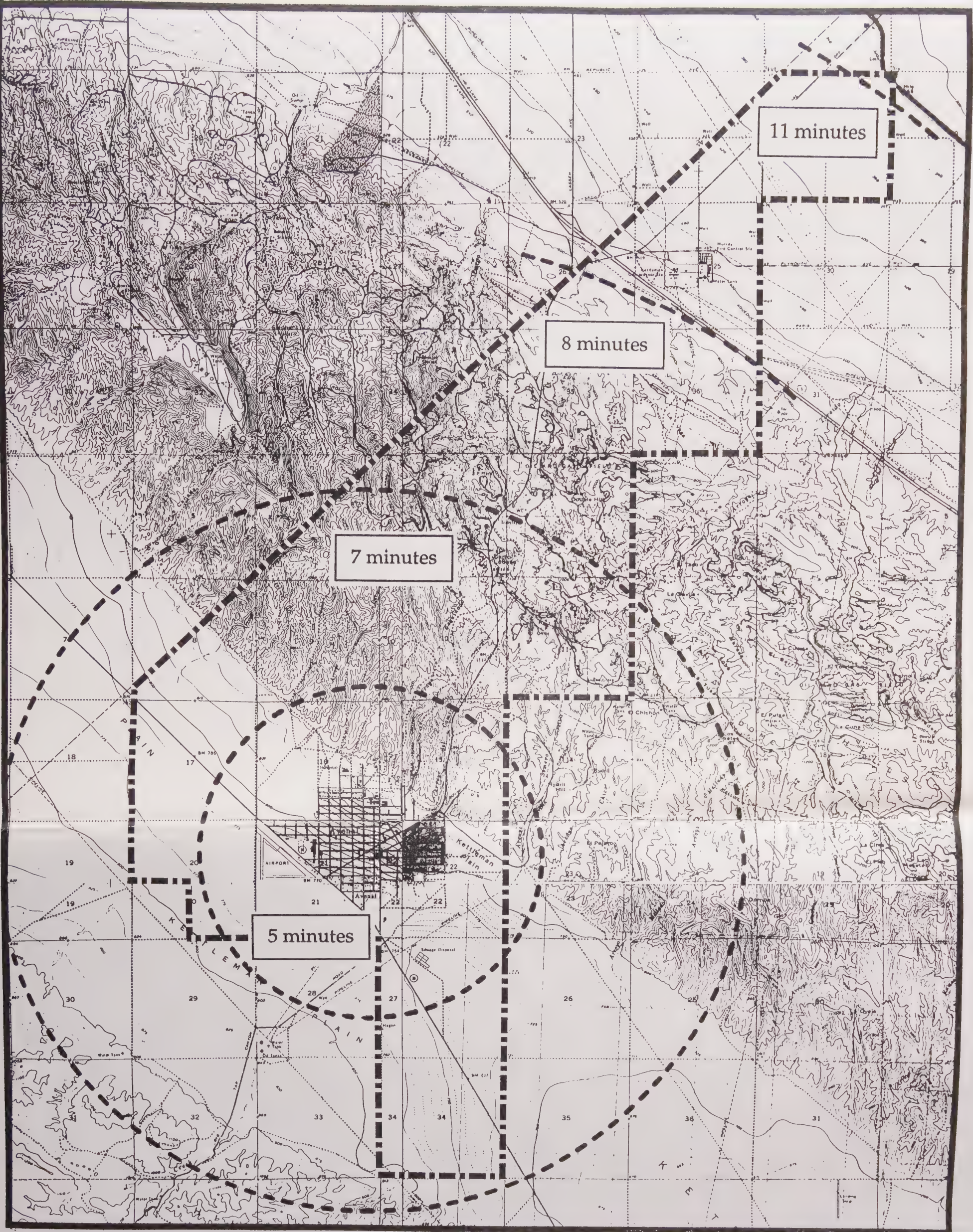
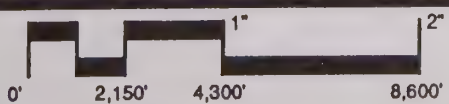


EXHIBIT 1

AVENAL GENERAL PLAN



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FIRE RESPONSE

APPROXIMATE FIRE CREW RESPONSE TIMES
SHOWN TO ALL AREAS OF THE COMMUNITY



Medical Facilities

Avenal District Hospital is located in the northwest quadrant of the city. The hospital employs 60 persons and has 28 rooms to accommodate patients. The hospital has one doctor on staff (an internist) while several other doctors are affiliated with the hospital and are available on a "on call." basis. The hospital also operates the local urgency care center which is comparable to a walk in medical clinic.

The Hospital has two ambulances equipped with Emergency Medical Technicians (EMTs). The ambulances work closely with the Coalinga District Hospital to provide emergency services. Coalinga's ambulances are operated by trained paramedics. In addition, there is a life flight available with transport to Bakersfield or Fresno trauma centers. Kings County does not have a trauma center. The California Highway Patrol operates the life flight helicopter.

Solid Waste

Avenal is the only city in Kings County with its own landfill site. The 159-acre, Class II-2 site, is in the eastern portion of Avenal at Hydril Road and Skyline Blvd. The landfill site currently takes in 25 tons of waste per day, or about 3,480 tons per year without the prison. Waste includes residential refuse, commercial solid wastes, tires, and construction/demolition wastes.

The City contracts with Western Waste Management for solid waste collection. It is anticipated that the landfill will be able to meet the City's demand for waste disposal for the next 20 years. However, the prison also disposes of its waste at the Avenal landfill site. The prison adds an additional 2,340 tons per year, which results in a total of 5,820 tons of fill deposited annually. At the rate of 5,820 tons per year, the capacity of the landfill will be reached in about 12 years rather than 20 years. Because the site will reach capacity much earlier than originally anticipated expansion plans have been discussed. It appears that an expansion of the present site would be preferable to creating a new site elsewhere. Expansion of the landfill could increase the capacity to 40 years, given a disposal rate of 300 tons per day.

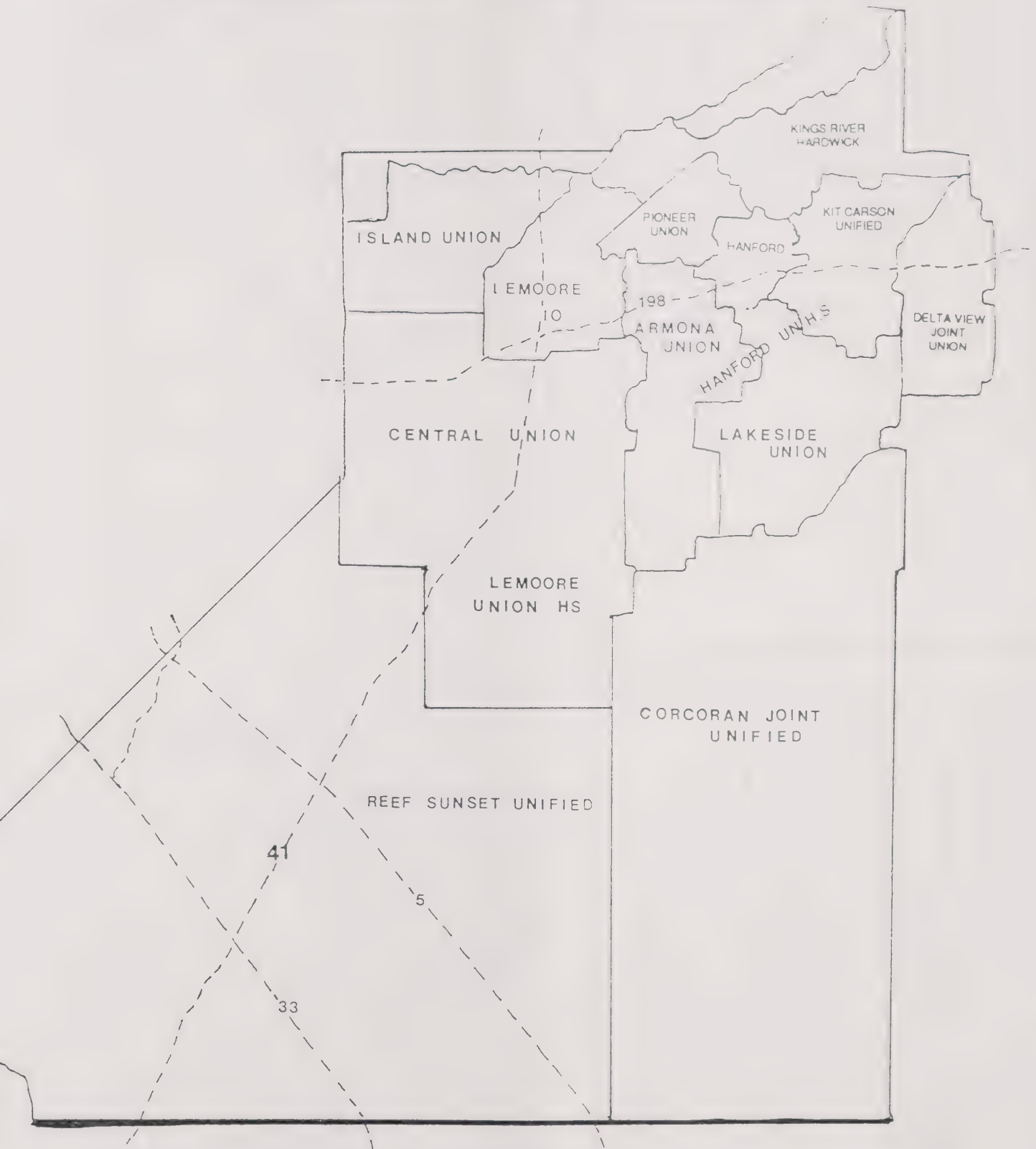
Schools

The Reef-Sunset Unified School District provides K-12 education for school-aged children in Avenal (see Exhibit No. 2). Student enrollment figures for the District are displayed in Table No. 8.

Primary education services within the planning area are provided by Avenal

EXHIBIT 2

SCHOOL DISTRICTS OF KINGS COUNTY



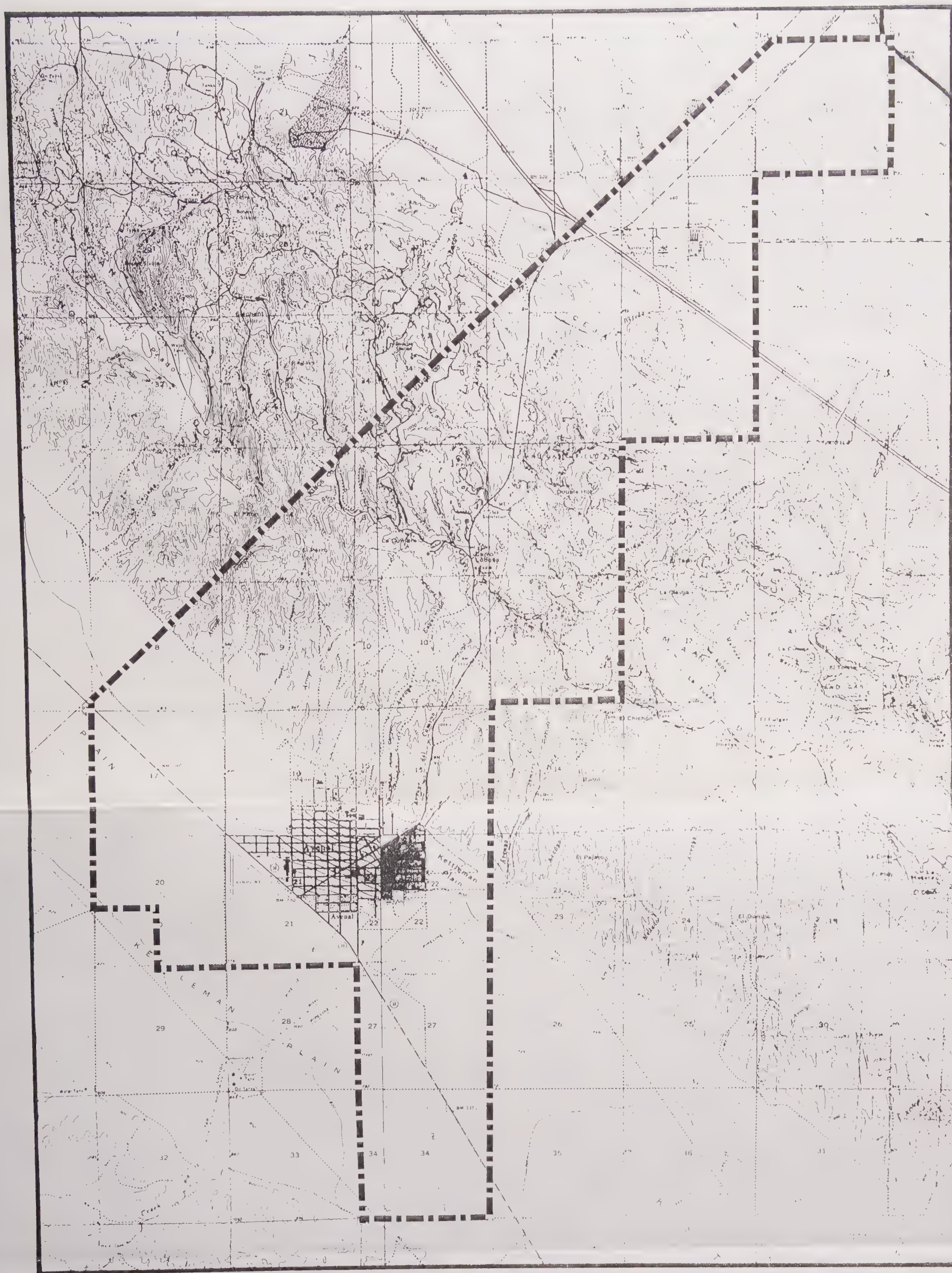
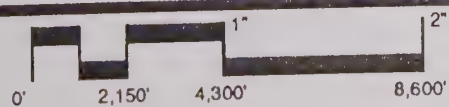


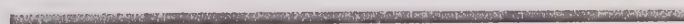
EXHIBIT 3

AVENAL GENERAL PLAN



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TOPOGRAPHY





Elementary and Kettleman City Elementary Schools. Together they have an enrollment of 1,255 students. The School District has indicated that Kettleman City Elementary School is at or near capacity. The School District has also shown an interest in the development of a third elementary school in the southeast quadrant of Avenal. They have discussed having a feasibility study done within the next two years, with the school to be developed within the next ten years.

Table No. 8
Reef-Sunset Unified School District Enrollment

	Number of Students
Avenal Elementary School	568
Kettleman City Elementary School	353
Reef-Sunset Middle School	334
Avenal High School	453
Sunrise High School (Continuation)	23
Independent Study	58
TOTAL:	1798

Source: Reef-Sunset Unified School District, 1992

The Reef-Sunset Middle School is a new school that began classes May 4, 1992. As shown in the table above, opening enrollment figures show 334 students. With the opening of the new middle school, the School District was able to eliminate the need for modular classrooms, which had been used to accommodate growth in the past.

The School District also indicated that Avenal High School is also reaching its maximum capacity. In an effort to better provide for future facilities, the School District has increased developer school impact fees from \$.63 per square foot to \$1.58 per square foot. Table No. 9 provides the number of school children in the District since 1982.



Table No. 9
School Enrollment, 1982 - 1991

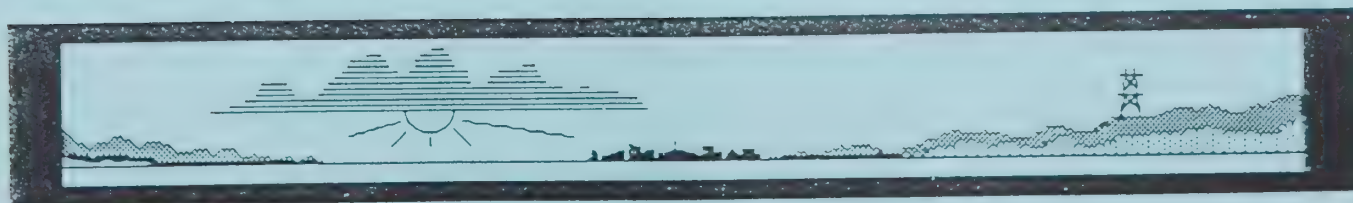
Academic Year	Number of Students
1982/83	1434
1983/84	1499
1984/85	1541
1985/86	1532
1986/87	1567
1987/88	1641
1988/89	1752
1989/90	1752
1990/91	1798

Source: Analytics, "The Economic Impacts of State Prisons in Kings County, 1990

CHAPTER

2

PHYSICAL ENVIRONMENT





CHAPTER 2 • PHYSICAL ENVIRONMENT

A. CLIMATE

The climate of the Avenal area is described as Mediterranean, which is typified by hot, dry summers and mild winters. Temperatures recorded at Lemoore Naval Air Station (LNAS) show the mean monthly high temperature for July to be 80.6° F, while the mean temperature for January is 45.1° F. (26) It is not uncommon for maximum temperatures to exceed 100 degrees during the summer months; nor for temperatures to drop below freezing in the winter. The highest temperature ever recorded at LNAS was 113° in July of 1975. The lowest temperature of record was 14° in January of 1962.

During the summer, a high pressure ridge develops over the Sierra Nevada blocking the penetration of moist air from the Pacific. This high pressure system tends to weaken during the winter months thereby opening the door to Pacific storms. Approximately 90% of all rainfall in Avenal occurs between November and April. Average rainfall measured at Kettleman City is 6.51 inches per year compared to 7.83 inches at Coalinga and 7.64 inches at Lemoore. Avenal's rainfall is probably somewhere between these figures. Rainfall can vary widely from year to year. Annual rainfall totals in Coalinga have ranged from 3.78 inches to 13.63 inches over the last 10 years.

Air movement through the San Joaquin Valley is in a southeasterly direction. Wind enters the Valley over the passes east of the San Francisco Bay and exits through mountain passes at the southern end of the San Joaquin Valley, principally Tehachapi. Meteorological data from LNAS indicates that the average wind speed is 4-6 knots with maximum gusts 40-50 knots recorded from October to May. Wind direction records measured between 1967 and 1971, indicate that winds blew out of the northwest quadrant 64 percent of the time. The prevailing wind direction is from the north and north-northwest, except in December and January, when the winds blow from the southeast or east-southeast.



Table No. 10
Summary of Weather Data at Lemoore Naval Air Station (LNAS)

Month	Temperature				Precipitation		Wind	
	Ave. Max.	Ave. Min.	Ave.	Extreme	Rainfall	Days w/ Precip.	Prevailing Direction	Ave. Speed
January	54.5	35.7	45.1	78/14	1.3	6	SE	3.8
February	62.5	39.4	51.0	82/21	1.5	7	N	6.1
March	67.6	40.7	54.2	90/22	1.2	7	NNW	5.1
April	74.7	43.6	59.1	102/30	0.6	4	NNW	5.8
May	85.1	51.0	68.1	109/34	0.2	2	NNW	6.3
June	93.0	58.0	75.0	112/52	0.4	1	NNW	6.0
July	99.0	62.1	80.6	113/47	0.1	0	NNW	5.8
August	96.9	61.6	79.3	112/48	0.0	0	NNW	5.2
Sept	90.6	56.6	73.6	107/41	0.3	1	N	4.9
October	80.5	48.0	64.5	104/24	0.3	2	NNW	4.4
November	66.0	40.0	53.0	87/22	0.9	6	NNW	3.5
December	53.8	35.3	44.6	80/18	0.9	7	ESE	3.4
Totals	77.0	47.7	62.3		7.6 in.	43		5.0 knot

Source: Naval Oceanography Command, Lemoore

B. TOPOGRAPHY

There are two major topographic features in the Avenal area: the Kettleman Hills and the Kettleman Plain. The Kettleman Hills rise from the floor of the San Joaquin Valley to an elevation of about 1,300 feet above mean sea level (MSL). The urbanized portion of Avenal is located on the Kettleman Plain, a small valley lying between the Kettleman and Kreyenhagen Hills at an elevation of 775' MSL (see Exhibit No. 3).

The Avenal planning area extends from the Kettleman Plain northeastward through the Kettleman Hills to the western edge of the San Joaquin Valley. Elevations range from approximately 875' MSL near Avenal to 1,200 feet in Section 4, Township 22 South, Range 17 East. The hills are characterized as rolling and are sharply dissected by water eroded arroyos or washes. The sides of these canyons are steep, often exceeding 30 percent.

In general, as slope steepness increases, the likelihood of landslides and erosion become a hazard. Also, steep slopes tend to draw fire upwards. Slopes in excess of 15 percent create "moderate" constraints on agriculture and urban development and



slopes in excess of 30 percent are considered "severely" limiting for these types of uses. Exhibit Nos. 4 and 5 identifies different slope categories - 30 percent and over, 15-29 percent, and 0-15 percent - for portions of the planning area that can potentially be developed.

The majority of slopes in the planning area are in the 15-30 percent category, located along the hillsides of the less steeply dissected washes. Most of the slopes in this category tend to be steeper, approaching 25 percent. Slopes greater than 30 percent are scattered throughout the mountainous area of the planning area.

Areas with slopes 5-15 percent are located on large hilltop complexes and in the bottom of washes. Areas with topography potentially suitable for development exist in the northeast corner of Sections 8, 16 and 22, the western half of Section 15, and the southern half of Section 9, Township 22 South, Range 17 East.

Areas with slopes ranging from 2-5 percent are situated primarily on the Kettleman Plain. The entire City of Avenal and the Avenal State Prison are built on ground within this slope range. That portion of Avenal's city limits that extends into the San Joaquin Valley, near Interstate Highway 5, also contains land that is relatively level, 2-5 percent slopes.

Solar exposure, which is the amount of sunlight that hits the ground, varies greatly throughout the mountainous area of Avenal. Hillsides with southern exposures receive more direct sunlight than north facing slopes and as a consequence, have higher evapotranspiration rates and are significantly drier. South facing slopes appear to be more sparsely vegetated and are probably more erosive than north facing slopes. Conversely, north facing slopes are moister, and consequently, they are more heavily vegetated.

C. SOILS

The soils in the Avenal area are described by the Soil Survey of Kings County, prepared by the Soil Conservation Service, Department of Agriculture (see Exhibit No. 6). The general soil map of this Survey shows two major soil groups in Avenal: the Kettleman-Cantua-Mercey soils, located in the Kettleman Hills, and the Avenal-Panoche soils, located on the Kettleman Plain. The Kettleman Hills soils are derived from sandstone and shale and are associated with moderate to steep slopes. Soils on the Kettleman Plain are associated with alluvial fans. They are very deep, nearly level and are well drained.

The Kings County Soil Survey identifies five specific soils in the planning area. They are Panoche loam, Kettleman loam, Cantua course sandy loam and Wasco sandy loam, located on the Kettleman Plain and San Joaquin Valley floor, and the Kettleman-Cantua complex, located in the Kettleman Hills.



Panoche loam is a very deep soil that is well drained and is located on alluvial fans. This soil is suited for urban development as well as agriculture - it has a Class 1 agricultural rating (Class 1 soils have the fewest limitations for agriculture; Class VIII have the most limitations for agriculture) and a Storie Index rating of 100 (A Storie Index rating of 80-100 has the greatest suitability for intensive agriculture; less than 10 has the least suitability).

Kettleman loam is a moderately deep soil that is well drained and is located on the edges of the Kettleman Hills. Runoff from this soil is rapid and hazard of erosion is high. This soil is best suited for rangeland. It has a Class VI agricultural rating and a Storie Index of 63. Limitations for urban development are steepness of slope, moderate depth to bedrock, and hazard of erosion.

Cantua course sandy loam is a deep soil that is somewhat excessively drained. This soil is best suited for rangeland. It has a Class IV agricultural rating and a Storie Index of 73. This soil is poorly suited for urban development, limitations include steepness of slope, shallow depth to soft bedrock, hazard of erosion, and moderately rapid permeability.

Wasco loam is a very deep soil located on alluvial fans. This soil is well suited for agriculture. It has a Class II agricultural rating and a Storie Index of 81. The main limitation to developing on this soil is its moderately slow permeability, which can cause septic tank adsorption fields to fail.

Table No. 11
Development Potential of Soils

Soil Type	Res. Dwellings	Comm. Buildings	Streets	Parks	Golf Course	Paths/Trails
Kettleman	severe	severe	severe	severe	severe	severe
Cantua	severe	severe	severe	severe	severe	severe
Panoche loam	moderate	moderate	moderate	moderate	moderate	moderate
Wasco sandy loam	slight	slight	slight	slight	slight	slight
Kettleman loam	moderate	moderate	moderate	moderate	moderate	moderate
Cantua sandy loam	moderate	moderate	moderate	moderate	moderate	moderate

Source: United States Department of Agriculture, Soil Conservation Service

In the mountainous parts of the planning area, erodibility is a critical soil characteristic. Erosion factor "K" is a constant used in soil loss equations to predict sheet and rill erosion by water. K factor values range from 0.02 to 0.69 with the



SLOPE ANALYSIS



AREAS WITH SLOPES
GREATER THAN 30 %



AREAS WITH SLOPES
FROM 15% TO 30%



AREAS WITH SLOPES
LESS THAN 15%

AVENAL GENERAL PLAN

EXHIBIT NO. 5



0 550 ft. 1,100 ft. 2,200' ft.

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higher values representing greater susceptibility to erosion. Erosion Factor "T" represents the amount of soil (in tons per acre) that can be eroded by wind and water without affecting soil productivity over a sustained period. Wind erodibility groups indicate the susceptibility to wind erosion and the amount of soil lost. The groups are numbered 1-8 with the highest number being the least erodible. The physical characteristics of soils in the planning area are described in Table No. 12.

Table No. 12
Physical Properties of Soils

Soil Type	Permeability	Available	Shrink/Swell	Erosion Factor		Wind Erodi- bility Group
	in/hr	H2O Capacity in/in	Potential	K	T	
Kettleman	.06-2.0	.14-.16	low-mod.	0.37	3	6
Cantua	2.0-6.0	.09-.12	low	0.43	2	5
Panoche loam	.06-2.0	.14-.18	low-mod.	0.43	5	6
Wasco sandy loam	2.0-6.0	.08-.13	low	0.32	5	5
Kettleman loam	.06-2.0	.14-.18	low-mod.	0.37	2	6
Cantua course sandy loam	2.0-6.0	.09-.12	low	0.43	3	5

Source: USGS, Soil Conservation Service

D. GEOLOGY

The Avenal planning area lies within the North Dome of the Kettleman Hills, an important economic and stratigraphic feature. A major uplift of the coast ranges during the Pleistocene epoch caused the folding of tertiary marine sediments and quarternary fluvial deposits along a northwest trending anticline. This folding exposed three different geologic formations in the Kettleman Hills: the Tulare, San Joaquin and Etchegoin-Jacalitos.

Only the Tulare and San Joaquin formations are found within the planning area. The San Joaquin formation was deposited in the late Pliocene epoch and consists of silty sandstone, silt and clay of non-marine origin. The Tulare formation consists of nonmarine sandstone and conglomerate of fluvial origin and lacustrine deposits of sandstone, clay and limestone.

The asymmetric syncline formed by the folding of the Kettleman Hills also created ideal conditions for the concentration and entrapment of oil. Pressure from water and natural gas forced oil from the Temblor and Kreyenhagen formations into pools at the dome of the anticline. Oil and natural gas was discovered in the North Dome in 1928, leading to extensive oil well development in the region.

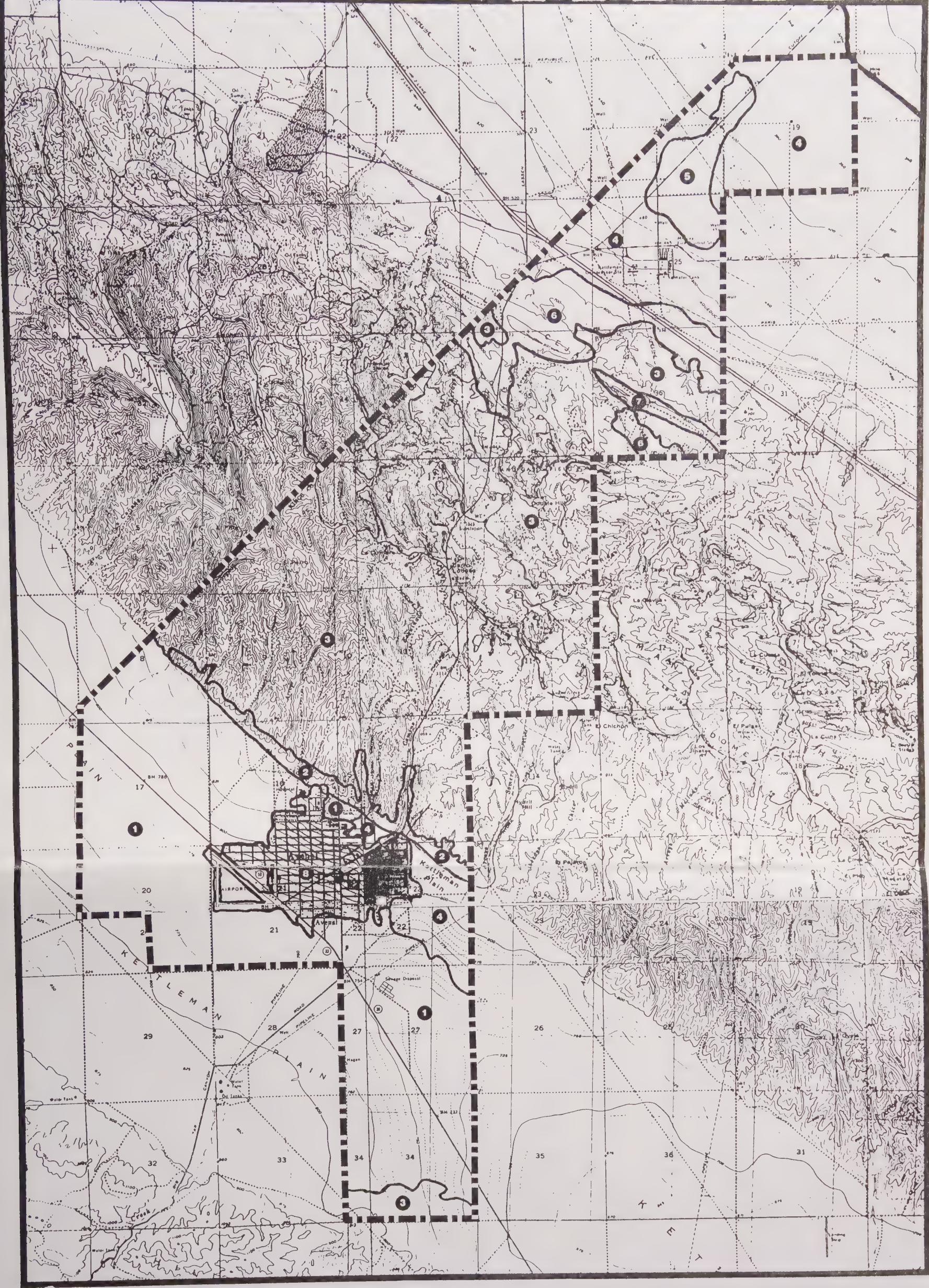


EXHIBIT 6

AVENAL GENERAL PLAN



0' 2,150' 4,300' 8,600'

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SOILS

- | | |
|----------------------------|--|
| ① Panoche Loam | ⑤ Milham Sandy Loam |
| ② Kettleman Loam | ⑥ Cantua Course Sandy Loam
(slopes of 5 - 15%) |
| ③ Kettleman-Cantua Complex | ⑦ Cantua Course Sandy Loam
(slopes of 15 - 30%) |
| ④ Wasco Sandy Loam | ⑧ Urban Land |



E. WATER

Surface Water

Avenal does not have any year-round water courses that traverse the planning area, however, numerous intermittent water courses, called arroyos, periodically carry waters through the Avenal area. Avenal is located on the Kettleman Plain, which lies between the Kettleman Hills to the north and east and the Kreyenhagan Hills to the south and west. During intense storms, runoff that emanates from these hills causes flooding along the bottom of the valley floor and adjacent to certain drainage courses. This water ultimately flows in a southeasterly direction to a terminal point in the Tulare Lake Basin, 18 miles to the south. Intermittent creeks, such as Arrow Curvo and Arroyo Esquinado, are found in several of these drainages; however, they flow only during periods of high rainfall.

Ground Water

The ground water basin under the Kettleman Plain, which encompass about 29,000 acres, is separate and distinct from the San Joaquin Valley basin. A water study completed by CH2M Hill for the Avenal State Prison in 1984 showed that the aquifer was producing about 23,000 acre feet per year. Recharge from surrounding watersheds only amounted to about 9,000 acre-feet per year - a overdraft of 14,000 acre-feet per year. As a result of this overdraft, depth to groundwater has been dropping by 4 to 5 feet per year. (CH2M Hill, Water Supply Study - California State Prison, Kings County, June 19, 1984).

Average depth to groundwater is 240 feet. Depth to groundwater has been measured at 359 feet at a well site on the high school campus and 365 feet at a monitoring well located at the Avenal Landfill.

F. LAND USE

The urbanized portion of Avenal is located on the Kettleman Plain, between the western base of the Kettleman Hills and State Highway 33. State Highway 269 bisects the city in an east/west direction and eventually intersects with State Highway 33 on the west side of the city. These two state highways divide the city into two sections, north and south. A land use survey was conducted for the City of Avenal in 1992. The results are displayed in Table No. 13.



Table No. 13
Avenal Land Use

<u>Land Use Category</u>	<u>Acreage</u>	<u>Number</u>
residential		
single family residential	239 acres	includes 104 mobile homes
multi-family residential	34	
mobile home parks	<u>1.3</u>	
	274.3	
school		
elementary	19.4	
middle	19.9	
high school	<u>33.1</u>	
	72.4	
churches	3.8	
park	4.7	
governmental		
Recreation Bldg.	.2	
Kings County offices	3.8	
Reef-Sunset School District	3.4	
Avenal City Hall	.9	
U.S. Post Office	.3	
Avenal State Prison	626.0	
Avenal District Hospital	5.0	
Kettleman Line School	<u>42.0</u>	
	681.6	
public utilities		
old sewage treatment plant	106.	
new sewage treatment plant	14.6	
P.G. & E.	<u>43.0</u>	
	163.6	
airport	82.6	
landfill	159.7	
commercial	39.5	
industrial	2.0	
vacant land	250.	403 vacant residential lots
agriculture	3500.	
grazing, oil and gas exploration	5055.	
street, highway and canal ROW	1555.	
TOTAL	11,844 acres	

Source: Collins & Associates, 1992

Both sections of Avenal contain a mix of single and multi-family residential uses. Most of the public buildings and grounds are situated on the north side, including three schools, the hospital, a park, and city hall. The south side of town contains the Kings County offices, located on State Highway 269 (Skyline Blvd.).



Avenal has five major land uses that are significant in terms of the community and the region. They are the Avenal State Prison, waste water treatment plant, airport, landfill and the to-be-developed industrial park. Future land use plans will need to consider the location of these uses and the impacts they can have on nearby uses.

Ownership

Avenal is unique in regards to land ownership in that a substantial amount of land within the city limits is owned by oil companies or is publicly owned, City of Avenal, State of California or federal government (Bureau of Land Management). In terms of future land use planning, ownership of property can have a bearing on the direction a city can grow. For example, if a parcel of land is in the path of development and is owned by an oil company the city may have to rethink its land use plans for that area should the company not wish to develop. Exhibit No. 7 identifies property ownership in the planning area.

Williamson Act

Land under an agricultural preserve contract, Williamson Act, requires the owner of that land to maintain it in agriculture for a period of at least 10 years. Land under contract can delay development of a parcel of land for ten years. The owner of the property can file a Notice of Non-Renewal, which starts the ten year process of removing the property from the Williamson Act, or they can remove the land immediately from the Williamson Act but they must pay back taxes.

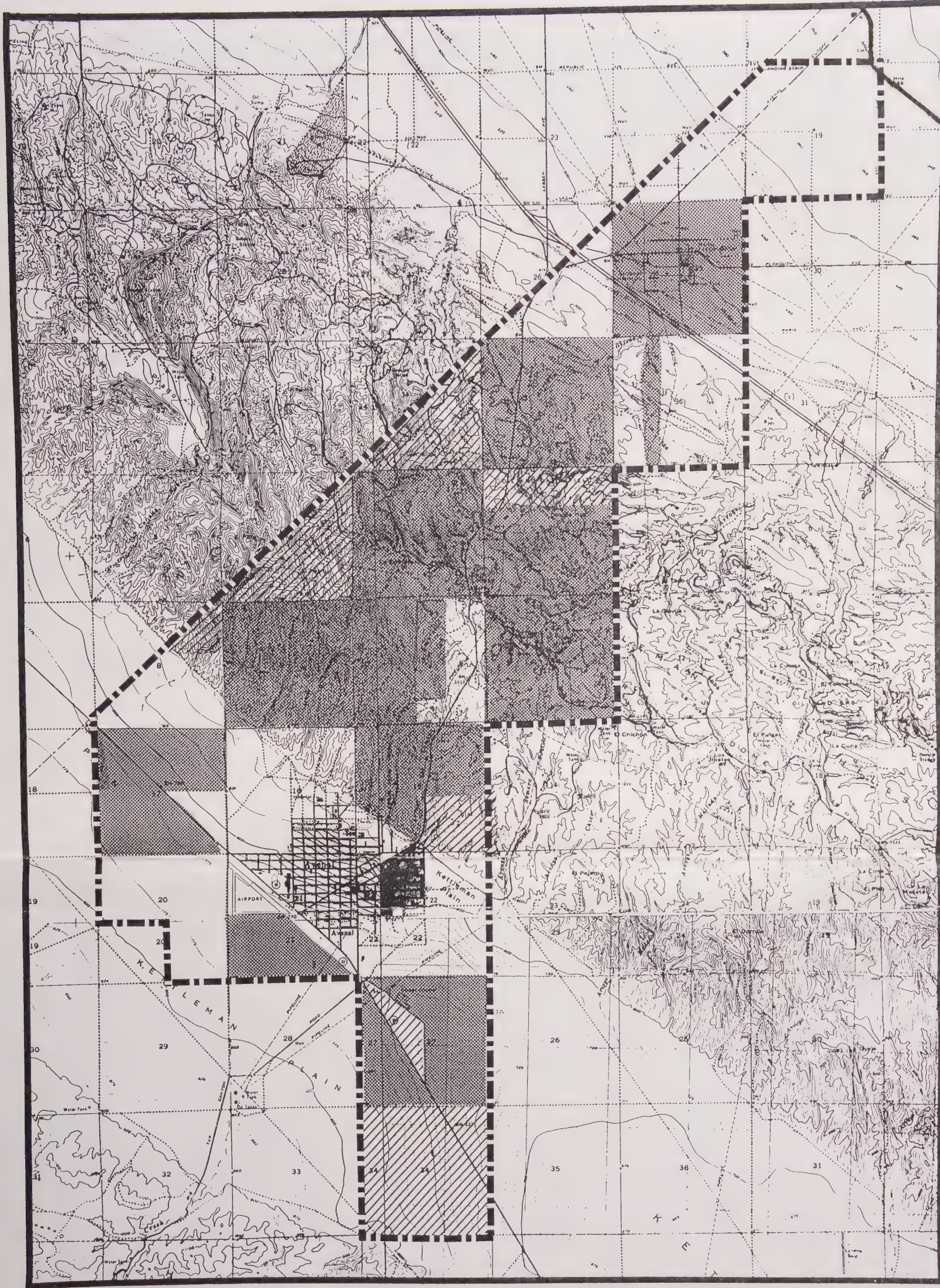
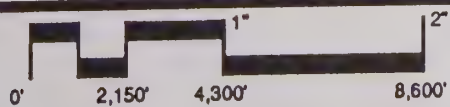


EXHIBIT 7

AVENAL GENERAL PLAN

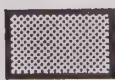


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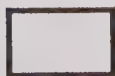
LAND OWNERSHIP



Government-owned parcels



Oil company-owned parcels



Privately-owned parcels



G. INFRASTRUCTURE

Sanitary Sewer System

Collection System

The City of Avenal provides sewer service to its urbanized areas and the Avenal State Prison. The City's sewage collection system includes two major trunk lines in Laneva Boulevard, 8 and 10 inches in diameter, that extend from the urban area to the sewage treatment plant located in southeast Avenal. Within the urban area, the collection system generally consists of 6-inch diameter lines. An 18-inch line connects the State Prison directly to the treatment plant.

The City's collection system drains by gravity to the treatment plant. The system operates without pump stations and there are no force-main lines.

The major trunk lines serving the City are currently not operating at their capacity according to City staff.

Treatment Plant

The existing Avenal treatment plant was constructed in 1987 along with the State Prison, located west of the treatment plant. Avenal's former treatment plant was located approximately one mile north of the existing plant.

Capacity

The existing plant was designed with a hydraulic capacity of approximately 1.8 million gallons per day (mgd). It currently is permitted for a discharge flow of 1.63 mgd by the California Regional Water Quality Control Board (CRWQCB).

Through an agreement with the City of Avenal, the State Prison is allocated approximately one-half of the treatment plant's design capacity. The Prison's allocation includes flows of nearly 0.8 mgd of domestic wastewater and approximately 0.1 mgd of industrial wastewater. The City has reserved the remaining one-half of the plant's capacity for future development in Avenal.

The average biochemical oxygen demand (BOD) loading capacity of the plant is 3,100 pounds per day; the peak BOD loading capacity is 8,300 pounds per day. The average total suspended solids (TSS) loading capacity is 3,400 pounds per day, while the peak TSS loading capacity is 9,400 lbs per day.



Facilities

The treatment plant, which currently is operated by OMI, Inc., consists of an oxidation lagoon, a clarifier, and chlorination facilities. A recently completed study recommended that the City install a compactor and washer at the bar screen (at the headworks to the plant) to reduce the amount of fecal matter and other organic solids that are currently removed from the screen and landfilled. The compactor and washer will allow more of the organic solids to pass through the screen and move through the plant.

Wastewater from the Prison is "pre-treated" in a pair of anaerobic lagoons at the Prison before it is discharged to the plant. This pre-treatment reduces the TSS and BOD loading of the sewage generated by the Prison. Sewage from the Prison tends to have high BOD loadings because it includes wastewater from the Prison's swine production operation.

Treated effluent from the plant is pumped across Highway 33 to a 625 acre-foot (200 million gallons) storage pond located immediately south of the Prison. The effluent is applied to agricultural lands on the west side of Highway 33.

Flows

Flows entering the treatment plant have averaged 0.78 mgd between 1988 and 1991, ranging from a high of 0.84 mgd in 1990 to a low of 0.66 mgd in 1991. This reduction in flow has occurred as a result of conservation measures implemented by the City, primarily in response to the drought and the City's reduced allocation of water from the San Luis Canal.

During 1991, the average monthly flows ranged from a high of 0.72 mgd in January to a low of 0.61 mgd in April. Daily peak flows reached 1.1 mgd. This daily peak occurred during a storm event in which runoff was entering the manholes of the trunk lines along Highway 33. The ratio of the daily peak flow to the annual average daily flow is 1.67.

The Prison generated an average flow of 0.30 mgd in 1991, which was approximately 45 percent of the total flow at the plant. The City generated an average flow of 0.36 mgd in 1991, which represented 55 percent of the total flow at the plant.

Based on a 1991 non-prison population of 5,810 and an average flow at the plant from the City of .36mgd, the city-wide sewage generation rate is approximately 64 gallons per day per person. The average daily generation rate per residential unit is approximately 220 gallons per day (based on a occupancy rate of 3.4 people per unit).



In 1991, the average BOD loading at the plant was 1,780 pounds per day, while the average TSS loading was 1,210 pounds per day.

Available Capacity

Based on 1991 flows at the plant, 1.14 mgd of the plant's capacity currently is unused. Approximately 0.6 mgd of this available capacity is allocated to the Prison, while the remaining 0.54 mgd of the unused capacity is reserved for the City.

Based on the 1991 average sewage generation rate of 64 gpd per person, the treatment plant's reserve capacity (for the City) is sufficient to accommodate approximately 8,440 additional people or 2,480 new single-family residential units (at an occupancy rate of 3.4 people per unit). Under peak flow conditions, the plant could accommodate approximately 5,050 additional people or 1,490 new residential unit.

At a projected annual population growth rate of 2.8 percent, the City's portion of the treatment plant's reserve capacity will not be utilized until the year 2024 under average flow conditions. Under peak flow conditions, the plant's reserve capacity will not fully utilized until the year 2014.

Sludge Disposal

Sludge from the treatment plant currently is stockpiled on-site. The City recently had samples of the sludge analyzed in order to determine if it is suitable for land application. The concentrations of heavy metal constituents are below State Title 22 levels for hazardous materials and the City expects to apply for a permit to dispose of the sludge by land application with the CRWQCB.

Water Supply System

The City provides water service to the urbanized portion of Avenal, the State Prison, and a limited number of connections in the northern portion of the community near Interstate 5. The City's source of water is the San Luis Canal which is part of the State and federal water project that provides water to the west side of the San Joaquin Valley. The City obtains the Canal water through a contract with the U.S. Bureau of Reclamation (USBR).

The USBR contract, which started in 1969 and runs through 2008, allocates a maximum delivery of 3,500 acre-feet per year to the City. However, the actual delivery to the City is subject to the availability of water to the San Luis Project. As a



result of the current drought, USBR has reduced the City's 1992 allocation to 1,400 acre-feet (1.25 mgd). The City is requesting that its 1992 allocation be increased to 1,750 acre-feet (1.56 mgd), which would match its 1991 allocation.

The City presently is studying the feasibility of supplementing its supply of Canal water with groundwater obtained from wells at the Canal. However, because groundwater in the Avenal area tends to have high levels of arsenic and total dissolved solids, the groundwater would be "blended" with surface water from the Canal at a ratio of 40 percent groundwater to 60 percent surface water.

Treatment/Pumping Plants

The City has two water plants at the extreme north end of the planning area near the Avenal Cutoff Road that pump water from the Canal. However, only one of these plants is currently operational. The Canal water is treated at the plant and pumped over the Kettleman Hills a distance of approximately eight miles to the developed portion of the City.

The operational water plant, which was constructed in 1987 by the State in order that the City could serve the Prison, has a capacity of 3.0 mgd (3,400 acre-feet per year). An agreement between the State Department of Corrections and the City of Avenal allocates 1.5 mgd (1,700 acre-feet per year) of the City's water to the Prison.

The annual production of the operational plant has averaged 1.77 mgd (1,980 acre-feet) between 1988 and 1991. During this period, the production ranged from a high of 2.0 mgd (2,240 acre-feet) in 1990 to a low of 1.67 mgd (1,870 acre-feet) in 1989.

The water plant's production in 1991, 1.74 mgd (1,950 acre-feet), was slightly lower than its 1990 production – a result of water conservation measures and the City's reduced allocation of water from the San Luis Canal. The 1991 production ranged from 2.2 mgd in September to 1.1 mgd in November. The highest production on record, 2.87 mgd, occurred in July of 1990.

The City's second water plant, which currently is not in operation, was used to pump water from the San Luis Canal prior to 1987. The City is assessing the feasibility of renovating the plant, which has a capacity of 2.2 mgd, so that it would be available to serve future development in Avenal and back-up the operational plant.

Transmission Lines

Water is delivered from the treatment plants to the developed portion of Avenal (and the Prison) in a pair of parallel transmission mains. The two mains consist of a



12-inch diameter line that, prior to the construction of the Prison, had served the community; and an 18-inch line that was installed at the time the State constructed the newer treatment plant. The larger main primarily serves the Prison. The two transmission mains run along the Avenal Cutoff Road and then parallels Highway 269 into urbanized Avenal.

Water currently is conveyed in an 18-inch water main from the treatment plant to an "on-line" 2.9 million gallon storage tank located approximately two and one-half miles south of Interstate 5. Although it currently does not convey water from the plant to the tank, the 12-inch main also feeds into and discharges from the tank.

From the storage tank, water is conveyed north (by gravity) in the 12-inch main to a Caltrans I-5 reststop, the PG&E pump station located east of the Avenal Cutoff Road, and a limited number of domestic connections. The 12-inch main delivers water to the developed portion of Avenal while the 18-inch main delivers water to the Prison.

The 12-inch main feeds into and discharges from a 750,000 gallon storage tank that is located immediately north of the developed portion of Avenal. A lateral line connects the 18-inch main with this tank.

Distribution System

Avenal's water distribution system consists of a network of mains in most of the streets and alleys in the community. The mains generally are 6-inch diameter asbestos cement pipes. To date, there are approximately 1,500 connections to the City's water system.

The City staff reports that the distribution system is adequate to satisfy current demands and provide the required Uniform Fire Code fire flows. The City operates the system with a pressure that ranges from 60 to 105 pounds per square inch (psi).

The 18-inch main that serves the Prison follows Seventh Avenue to Highway 33 and then southeast to the Prison. The City maintains a two million gallon storage tank adjacent to the Prison. Although the 18-inch main was built primarily to serve the Prison, it is inter-connected with the distribution system near Seventh Avenue and Orange Street by a valve that is manually operated. This valve is typically closed.

Demand

The annual water demand of the developed portion of Avenal has averaged 1.16 mgd (1,300 acre-feet) between 1988 and 1991. The demand ranged from a high of 1.29 mgd (1,445 acre-feet) in 1990 to a low of 1.05 mgd (1,172 acre-feet) in 1989.



The City's demand declined slightly in 1991 to 1.10 mgd (1,240 acre-feet) as a result of water conservation measures. The major water users in the City include Rice Park, the schools, and the hospital.

Based on an average non-prison population of 5,567 between 1988 and 1991, and the average demand of the developed portion of Avenal during that period, the average city-wide water demand rate was approximately 208 gallons per day per person. The average demand per residential unit is approximately 700 gallons per day (based on a occupancy rate of 3.4 people per unit).

The Prison had an annual average demand of 0.60 mgd (674 acre-feet) between 1988 and 1991. The Prison's demand ranged from a high of 0.71 mgd (795 acre-feet) in 1990 to a low of 0.40 mgd (448 acre-feet) in 1988. The Prison's 1991 demand was 0.66 mgd (737 acre-feet).

The combined demand of the urbanized portion of the City and the Prison has averaged 1.77 mgd (1,980 acre-feet) between 1988 and 1991. The peak demand of 2.0 mgd (2,240 acre-feet) occurred in 1990, while the low demand of 1.67 mgd (1,870 acre-feet) occurred in 1989.

Master Plan

The City of Avenal recently commissioned Yamabe & Horn, Civil Engineering, to prepare a Water Master Plan. The Master Plan will evaluate the condition of the existing water system, estimate the future demand of areas that are designated for development, and identify the future improvements that are necessary to serve the City as it develops. Yamabe & Horn expects that a draft copy of the document will be submitted to the City by 1992.



Storm Drainage System

Existing storm drainage infrastructure in Avenal is limited to a collection line on Highway 269 (Skyline Boulevard) that is operated and maintained by the State, and a City collection line on San Joaquin between First Street and Highway 33. Both of these collection lines discharge by gravity to open fields on the west side of Highway 33.

The City recently completed a street improvement program in which curb and gutter was installed on all streets in the developed portion of the community. Runoff from these improved areas drains as surface flow in a southwesterly direction toward Highway 33.



Circulation System

Avenal is served by a network of arterial, collector, and local streets, and three major regional transportation routes: State Highways 269 and 33, and Interstate 5 (I-5).

State Highways

Interstate 5 crosses through Avenal at the northern end of the planning area. On the west side of the San Joaquin Valley, I-5 is a divided four-lane roadway. The closest I-5 interchange to Avenal exists at Highway 269 (Lassen Avenue), approximately one-quarter mile outside of the city limits. Other I-5 interchanges near Avenal are at Highway 41, 10 miles south of Avenal; at Jayne Avenue, 5 miles north of Avenal; and at Highway 198, 14 miles north of Avenal.

Highway 269 begins at Highway 33 and runs northeast through the urbanized portion of Avenal and then north through the Kettleman Hills. After crossing the Kettleman Hills, it connects with the Avenal Cutoff Road and I-5. North of I-5, it extends north to Huron and State Highway 198.

Highway 269, which is a Federal Aid Primary State Highway, is classified as a "Rural Minor Arterial" by Caltrans. In 1990, the annual average daily traffic (AADT) on Highway 269 ranged from 5,500 at Highway 33 to 4,200 at the County Line.

Through urbanized Avenal, Highway 269 is referred to as Skyline Boulevard and designated as an "arterial" by the City. This roadway includes two undivided travel lanes, a center median, and parallel parking lanes. The roadway is constructed to a (curb-to-curb) width of 60 feet within a 100 foot right-of-way. The only control on Skyline Boulevard is a stop sign at Highway 33. The posted speed limit in the developed area of Avenal is 30 mph.

Highway 33 generally parallels I-5 through Kings County on a northwest-southeast alignment. North of Avenal, it connects with Highway 198 in Coalinga. South of Avenal it extends through Taft in Kern County and beyond.

North of Highway 41 near Kettleman City, Highway 33 is a Federal-Aid Primary Highway that is classified as a "Rural Minor Arterial" by Caltrans. In 1990, the AADT on Highway 33 ranged from 1,600 at 36th Avenue to 1,500 at the northern Avenal city limits.

Within the city limits of Avenal, Highway 33 is referred to as Laneva Boulevard and is designated as an "arterial" by the City. It represents the southwest boundary of the developed portion of Avenal. In the developed area, the roadway consists of two undivided travel lanes and paved shoulders within a 100-foot right-of-way. There



are no controls on Highway 33 within the city limits. The posted speed limit on Highway 33 in Avenal is 55 mph. At the entrance to the State Prison, the roadway has been widened and striped with left turn lanes and deceleration/acceleration lanes.

The two State highways are the designated truck routes in Avenal. Most of the truck traffic on these roads is for the movement of agricultural commodities through Avenal.

City Streets

The street system in the developed portion of Avenal consists of grid in which most of the streets are oriented north and south or east and west. The 1983 Circulation Element designates Third, Fifth, and Seventh Streets as north-south "collectors", while San Joaquin and Kings Streets are designated east-west "collectors". These "collectors" connect the arterial roadways with local streets.

Other than the State highways, the collectors carry the highest traffic volumes in Avenal, particularly Seventh Street, which is used as a "short-cut" between Highway 33 and Highway 269.

In the non-developed portion of Avenal, the Avenal Cutoff Road is a designated "rural arterial", while Plymouth Avenue is a designated "collector".

State Highways 33 and 269 cross the City street grid on diagonal alignments. This street configuration creates odd-angled intersections that have traffic problems and unusable triangles of land. In the interest of improving the traffic conditions along the State highways, the City recently realigned Kings Street at Highway 33, San Joaquin Street at Highway 33, and Seventh Avenue at Highway 33 such that the intersections were at 90 degrees. The intersection of the two State Highways was improved, Tulare Avenue was closed off at Skyline Boulevard, and the alley access to Highway 269 between First and Second Streets was eliminated.

Trip Generation

The significant generators of regional traffic in Avenal include the Prison, the PG&E Substation located near I-5, and the oil facilities in the Kettleman Hills. Land uses within the developed portion of Avenal that generate relatively high number of trips include the Avenal Hospital, Avenal High School, Floyd River Park, City Hall, and the Kings County Government Center on Skyline Boulevard (Highway 269).



Evaluation of Existing Operating Conditions

An evaluation of the current operating conditions on the major streets in Avenal was conducted using daily traffic volumes consisting of current 24-hour counts collected by the City and the 1990 Annual Average Daily Traffic (AADT) volumes published by Caltrans for the State Highways. The traffic volumes are presented in Exhibit No. 8.

Based on the ratio of the current volume to the estimated capacity (V/C), "level-of-service" (LOS) ratings can be assigned to the streets. Level-of-service ratings, which range from level "A" for free flowing conditions to level "F" for severely congested flow, are described in Table No. 14. An LOS of "C" or better generally indicates operating conditions that are acceptable by most drivers.

The V/C ratios and corresponding service levels for Avenal's major streets are presented in Table No. 15. All of the major city streets, which do not include the two State Highways, currently have an estimated daily capacity of 9,000 trips. With this capacity, the threshold for LOS "A" is 5,400 daily trips.

As shown in Table No. 15, the city streets currently are operating at LOS "A". San Joaquin Street is carrying the highest volume of traffic with 3,480 trips west of State Highway 269. Seventh Avenue, which is used as a "short-cut" between Highway 269 and Highway 33, appears to be carrying a relatively high volume of thru traffic. South of Highway 269, it currently carries nearly 3,000 daily trips, while north of Highway 33, the volume is approximately 2,100 trips. The City's traffic counts indicated that Kings Street currently has a daily volume, east of State Highway 33, of 340 trips. All other streets are carrying less than 2,000 daily trips.

In 1989 and 1990, Caltrans conducted evaluations of the operating conditions on State Highways 33 and 269. The findings of these evaluations, which are presented in Table 15 indicate that Highway 33 through Avenal is operating at LOS A - low volume, free flowing conditions. Highway 269 through Avenal is operating at LOS B - stable flow conditions. It should be noted that the LOS ratings assigned to these two highways are based on peak hour traffic conditions.

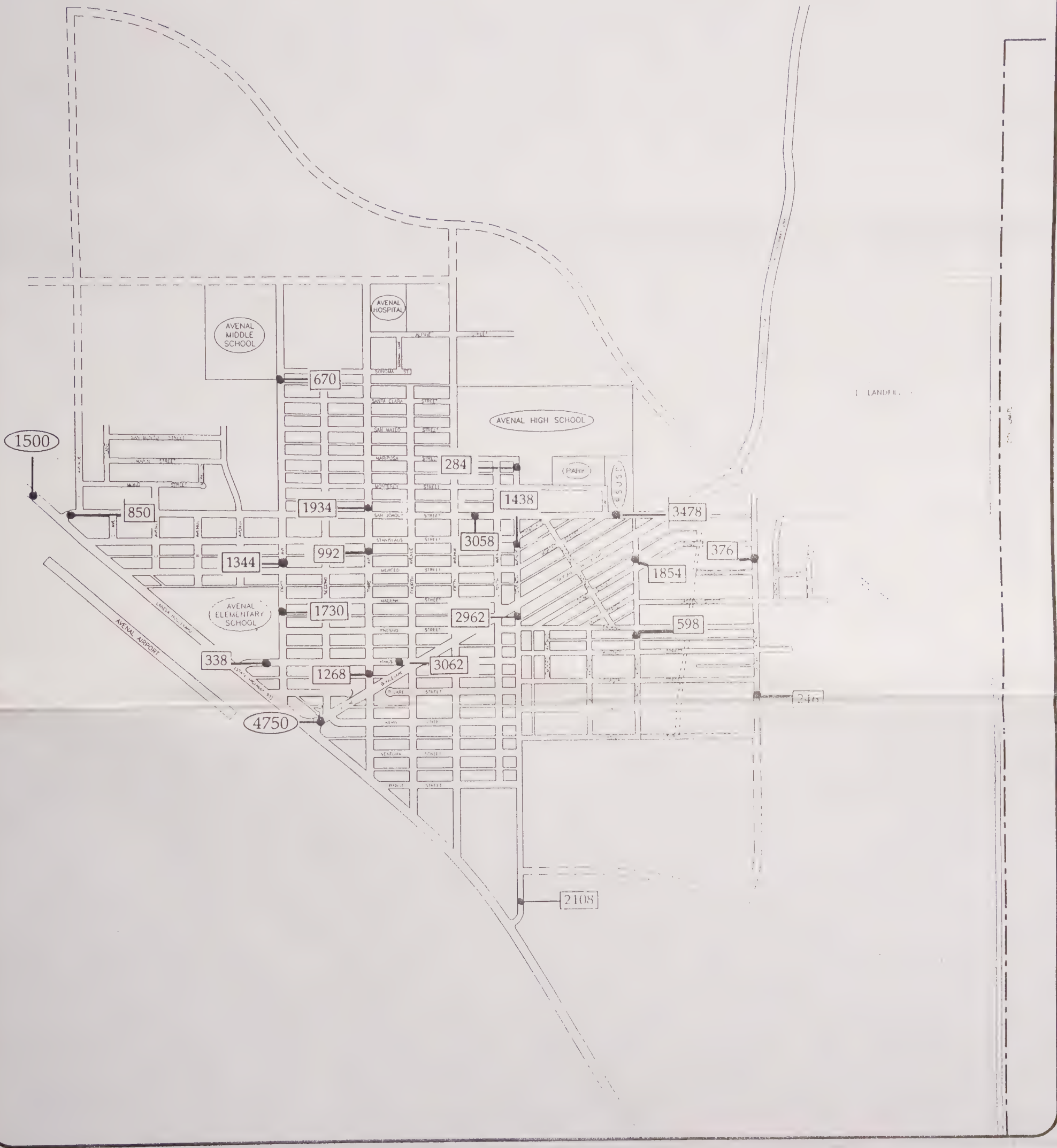
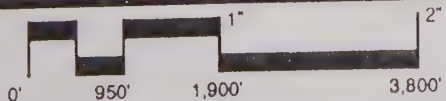


EXHIBIT 8

AVENAL GENERAL PLAN



COLLINS & ASSOCIATES
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TRIP GENERATION

EXISTING VEHICLE TRIPS PER DAY AT
SELECTED LOCATIONS



Table No. 14
Level of Service Interpretation

LOS	DESCRIPTION	V/C
A	Free flow, low volume, high operating speed, high maneuverability.	0.00–0.59
B	Stable flow, moderate volume, speed somewhat restricted by traffic conditions, high maneuverability.	0.60–0.69
C	Stable flow, high volume, speed and maneuverability determined by traffic conditions.	0.70–0.79
D	Unstable flow, high volumes, tolerable but fluctuating operating speed and maneuverability.	0.80–0.89
E	Unstable flow, high volumes approaching roadway capacity, limited speed, intermittent vehicle queuing.	0.90–0.99
F	Forced flow, volumes lower than capacity above due to very low speeds; heavy queuing of vehicles, frequent stoppages.	1.0

Source: 1988 Regional Transportation Plan, Tulare Count Association of Governments



Table No. 15
City of Avenal Circulation System

Existing Conditions on City Streets

Street	Lanes	Daily Type ¹	Daily Volume ²	Capacity	V/C	LOS
San Joaquin						
E/O S.H. 33	2	C	850	9,000	0.09	A
E/O Fifth	2	C	1438	9,000	0.16	A
W/O S.H. 269	2	C	3478	9,000	0.39	A
Kings						
W/O First	2	C	338	9,000	0.04	A
E/O Third	2	C	3062	9,000	0.34	A
Third						
N/O San Joaquin	2	C	1934	9,000	0.21	A
N/O Merced	2	C	992	9,000	0.11	A
N/O S.H. 33	2	C	1268	9,000	0.14	A
Seventh						
S/O S.H. 269	2	C	2962	9,000	0.33	A
N/O S.H. 33	2	C	2108	9,000	0.23	A

1 A: Arterial; C: Collector

2 Source: City of Avenal traffic counts (April, 1992)

Existing Conditions on State Highways 33 and 269

Segment	Lanes	Volume ¹ Peak Hour	AADT	LOS ²
S.H. 33				
North of 36th Ave	2	170	1,600	A
North City Limits	2	160	1,500	A
S.H. 269				
North of S.H. 33	2	480	4,750	B
North City Limits	2	360	3,600	B

1 Source: Caltrans, 1990 Traffic Volumes for Routes 269 and 33

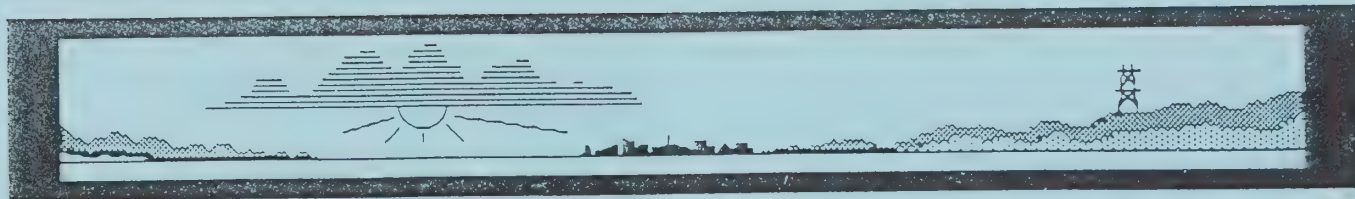
2 Source: Caltrans, Route Concept Reports for Rts. 269 and 33

(Note: The LOS ratings are based on peak hour volumes)

CHAPTER

3

RESOURCES





CHAPTER 3 • RESOURCES

A. SCENIC RESOURCES

The scenic qualities of a community are composed of a mixture of natural and man-made features. The value or importance of these features to the public is dependent upon the visual quality of the view. The rating of a view is a subjective process, however, the U.S. Forest Service has devised a rating system for classifying different views within a planning area. Originally, this classification system was used by the Forest Service to classify views that contained primarily natural features. The Consultant has modified this classification system to include the urban landscape. To identify significant scenic resources within the planning area, the Consultant has utilized this rating system to classify views along travel corridors and from sites that contain locally significant views. Table No. 16 contains the rating guidelines used by the Consultant.

The Consultant conducted a scenic resources survey in May of 1992. Major travel corridors and specific sites in and around Avenal were rated. The results of this survey are displayed in Exhibit No. 9.

Starting from the San Luis Canal, the views from the Avenal Cutoff Road ranged from 1 to 2, open agricultural fields and orchards. At Interstate 5, the rating dropped to a 3, as the view became a mix of poorly maintained buildings, vacant land and scattered out buildings. The view from Highway 269 from Interstate 5 to the top of the Kettleman Hills grade improved to a 1, natural grassland, uninterrupted by man-made features. At the top of the grade, the rating ranged from a 2 to a 3, exposed pipelines, tanks, buildings, and numerous cuts and fills. From the top of the grade into the urbanized portion of Avenal, the rating reverted back to a 1, natural grassland, arroyos, and rock outcrops. From city hall down Skyline Boulevard to Highway 33, the view ranged from a 3 to a 4, little landscaping, mixture of land uses, and some poorly maintained buildings.

Entering Avenal from the west along Highway 33 the rating was a 1, open fields and mountains to the east and west. Entering the urbanized portion of Avenal, the rating dropped to a 4 on the east side of the highway and to a 2 on the west side of the highway, open fields and the airport on the west and a mixture of poorly

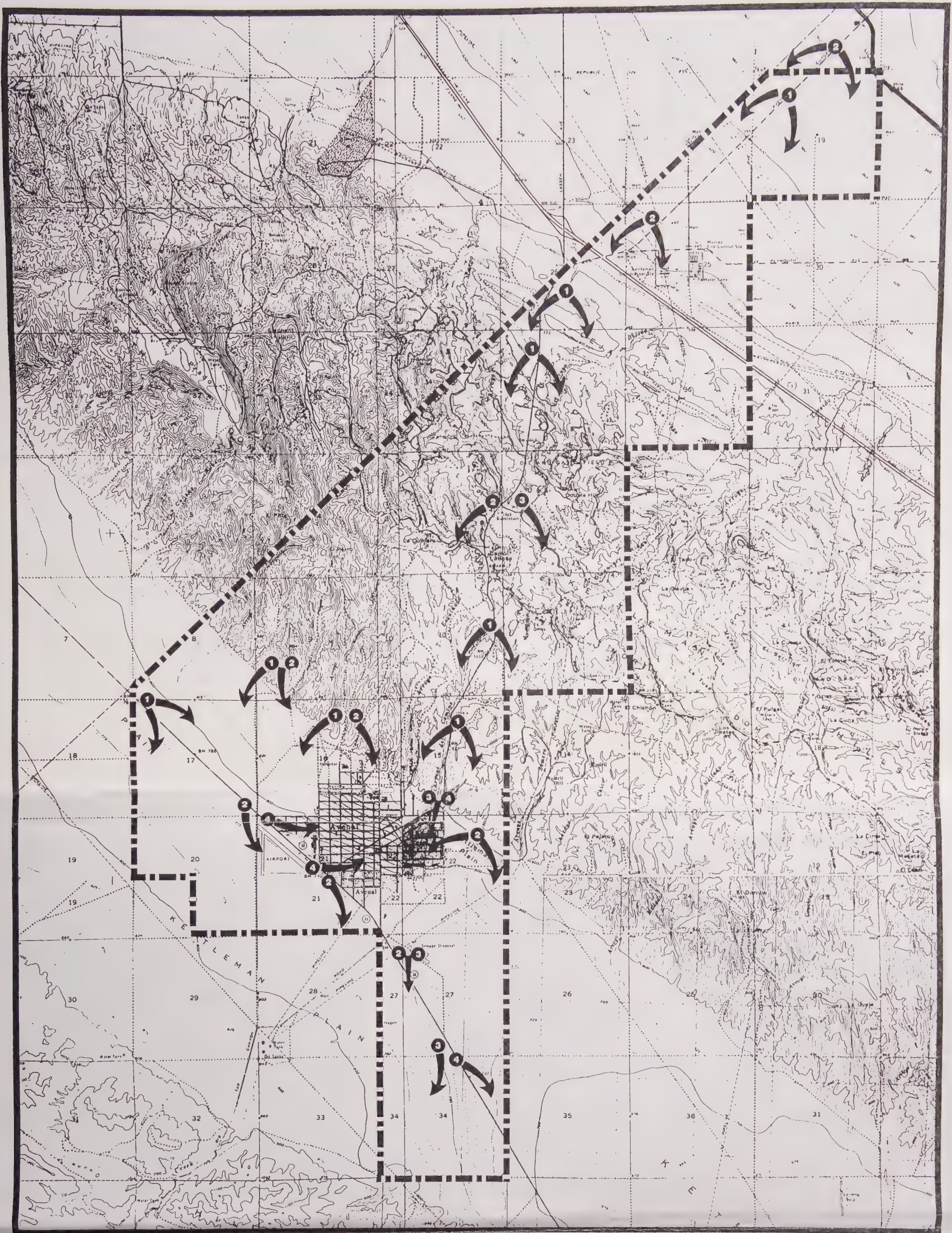


EXHIBIT 9

AVENAL GENERAL PLAN



0' 2,150' 4,300' 8,600'

COLLINS & ASSOCIATES
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VISUAL QUALITY SURVEY

VISUAL RATING CATEGORIES

- ① All features within view appear to be characteristic of the region. Strong visual harmony.
- ② Some incongruous visual elements present, but they do not heavily impact the visual image.
- ③ Increased number of incongruous visual elements competing for attention.
- ④ Uncharacteristic visual features begin to dominate the view.
- ⑤ Visual chaos. No dominating visual theme or character.



maintained buildings on the east. Leaving Avenal and proceeding towards the Avenal State Prison, the rating ranged from a 2 to a 3.

From specific sites near the urbanized portion of Avenal, the view from the hills that border the city to the north and east were rated a 2, a view of the city, the Kettleman Plain and as a backdrop, the Kreyenhagen Hills.

Table No. 16
Visual Rating Guidelines

<u>Visual Condition Class</u>	<u>Guidelines</u>
1	All features within the field of view appear to be characteristic of the region - open native grassland, an agricultural field, or an arroyo. Few, if any, man-made features are evident.
2	Most features within the field of view appear to be characteristic of the region - open native grassland, an agricultural field, or an arroyo. Man-made features are more evident and may attract attention, but are visually subordinate to inherent features. Man-made features may include oil storage tanks, pipelines, billboards, or buildings.
3	Man-made features dominate the field of view. These views are urbanized areas. They exhibit well-maintained and well-designed urban areas - proper setbacks, appealing landscaping, compatible land uses and continuity in terms of building scale.
4	Man-made features appear incongruous and dominate the field of view. These views are considered urbanized areas. They exhibit unmaintained buildings, minimal landscaping, a mixture of land uses and lack of continuity in terms of building scale.
5	Man-made features dominate the field of view. These views are considered urbanized. These urban views are dominated by deteriorating or dilapidated buildings, little or no landscaping, mixture of incompatible land uses, streets are unpaved or in poor condition, curb and gutter is lacking.

Source: U.S.Forest Service, 1974; modified by Collins & Associates, 1991



B. AGRICULTURE

Agricultural land is a renewable natural resource. Consumption of this resource is considered to be an irreversible environmental impact. Conversion of prime agricultural land to non-agricultural uses or impairment of its productivity is considered a significant environmental impact by CEQA.

The California Department of Resource Conservation defines "prime farmland" as land having the best combination of soil quality, growing season, and water quality. Within the planning area, prime farmland would be those lands having soils with a soil capability class of I or II, a Storie Index greater than 85, and a permanent source of irrigation water. Unique farmland has special combinations of soil quality, location, growing season and water supply needed to produce high value crops.

In 1989, Kings County had 681,000 acres under agricultural production. The top three income producing agriculture industries that year were cotton/lint, \$215 million; milk, \$159 million; and cows/calves, \$60 million.

A recent report released by the State Department of Conservation indicated that between the years 1984 to 1988, Kings County lost 8,632 acres to urbanization. This five-county study, which included Stanislaus, Merced, Madera, Fresno, and Kings counties, showed that Fresno County only lost 3,898 acres during that time period. Conversations with Kings County officials implied that the Department's figures were incorrect and that the urbanization figure was closer to 3500 acres, Avenal prison, 650 acres; Coalinga prison, 900 acres; Hanford, 1000 acres; Lemoore, 500 acres; and miscellaneous conversions, 500 acres.

The Department of Conservation's report also indicated that 4,113 acres in Kings County reverted to a "not actively farmed" status. These uses included rural ranchettes, dairy improvements, and other non-farm uses.

On a regional scale, the American Farmland Trust has estimated that from 1975 to 1989 urbanization has claimed 1000 to 3600 acres per year in the ten-county Central Valley. By 2010, the Trust estimates that another 360,000 will become urbanized.

The Farmland Map, prepared by the Department of Conservation, indicates that about 3200 acres of the non-urbanized land in the planning area is "prime farmland". Most of the non-urbanized land within the planning area is currently devoted to grazing land and oil and gas exploration. The land north and east of Interstate 5 and northeast and southwest of Avenal are the most productive agricultural lands. They are composed of Wasco and Panoche loam. The land in the Kettleman Hills is the least productive; it contains Kettleman and Cantua soils.



C. BIOTIC RESOURCES

Natural Communities

Associations of plant species that grow in assemblages under similar ecological conditions are called communities. Generally, they are named for the dominant species found in the association. Definition of natural communities is important, not only because it identifies the types of plants that are present, but also because it indicates the habitat types and animal species that may be found in the community. Two natural communities were found within the Avenal city limits: Non-native Grassland and Interior Coast Range Saltbush Scrub (see Exhibit No. 10). The community descriptions listed below follow Holland's 1986 report for the California Department of Fish and Game (CDFG) and the State's Natural Diversity Data Base.

Non-native Grassland - This community is found throughout California, primarily below an elevation of 3,000 feet. Non-native grassland is dominated by exotic (non-native) annual grasses in association with many species of native wildflowers. Characteristic species include; red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum leporinum*), filaree (*Erodium* spp.), fiddleneck (*Amsinckia* spp.), tarweed (*Hemizonia* spp.), peppergrass (*Lepidium* spp.) and lupine (*Lupinus* spp.).

Interior Coast Range Saltbush Scrub - This natural community is found only along the inner south Coast Ranges of California up to an elevation of approximately 2,000 feet. This community occurs in areas that are not affected by tule fog in the winter months. Interior Coast Range Saltbush Scrub is characterized by a moderate to dense cover of Allscale (*Atriplex polycarpa*) and other saltbush species (*Atriplex* spp.), California snakeweed (*Gutierrezia californica*), Locoweed (*Astragalus* spp.), and San Joaquin goldenbush (*Haplopappus acradenius bracteosus*). An understory of annual grasses (primarily bromes) is often found in this community.

Holland felt that the Interior Coast Range Saltbush Scrub is rare enough to merit inclusion in the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California*, due to its limited range and conversion to non-native grassland caused by year-round grazing. An example of this conversion is evident in the grazed portions of the saltbush community just north of the urbanized portion of Avenal, where approximately 30 percent of the community consists of dead saltbush plants.

Rare, Threatened, and Endangered Species

Seven animals of special status and five harvest species (animals that are hunted in California) are known to occur in the city limits. These animals are regulated by the U.S. Fish and Wildlife Service and the California Department of Fish and Game (CDFG) to insure that their populations remain viable. San Joaquin kit fox and

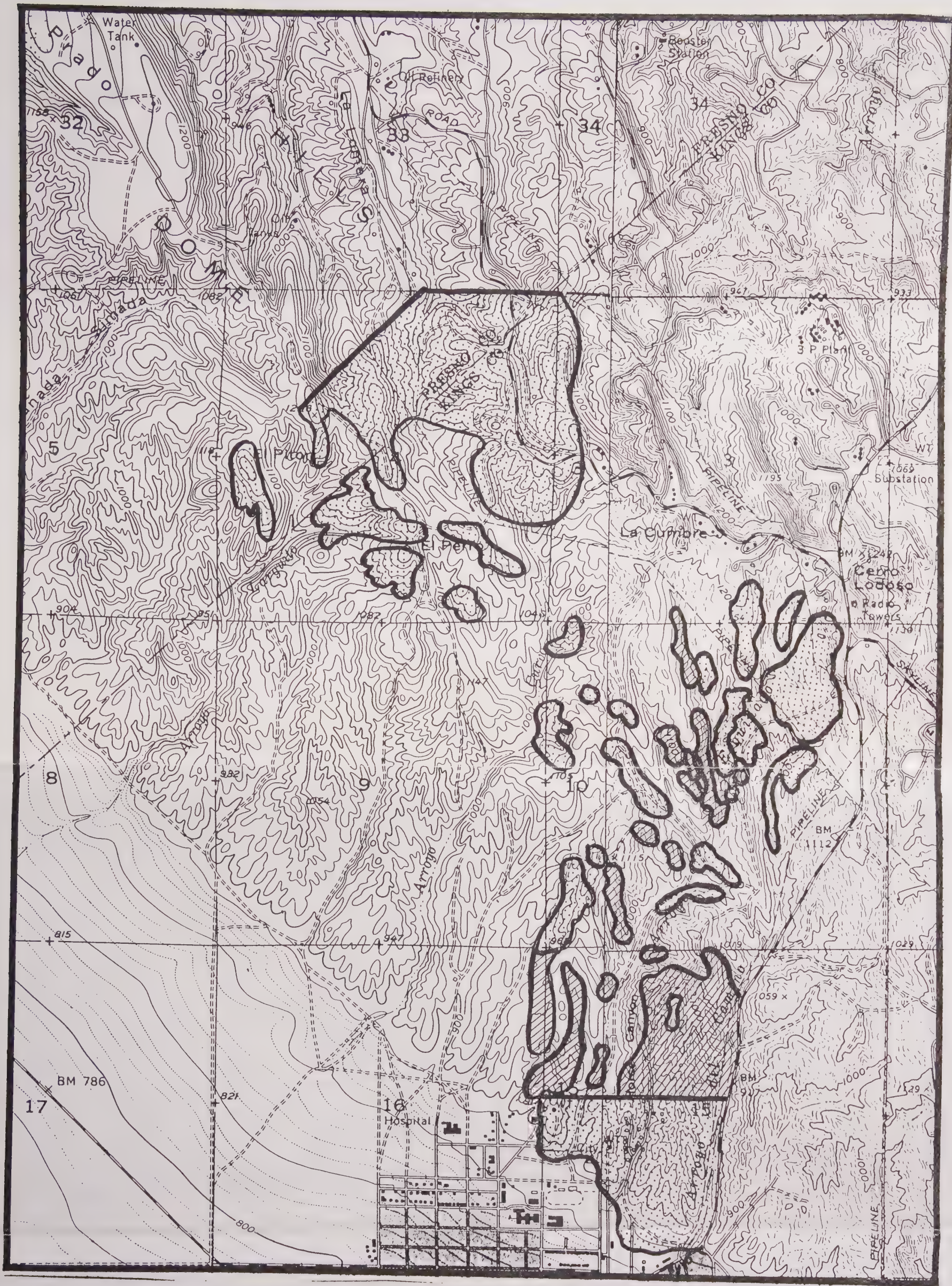
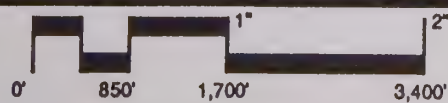


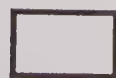
EXHIBIT 10

AVENAL GENERAL PLAN



COLLINS & ASSOCIATES
PLANNING CONSULTANTS

NATURAL COMMUNITIES



NON-NATIVE GRASSLAND



INTERIOR COAST RANGE
SALTBRUSH SCRUB



DEAD SALTBRUSH SCRUB



blunt-nosed leopard lizard are the most seriously threatened animals found within the city limits and are discussed below. The California Natural Diversity Data Base (CNDDDB), maintained by the California Department of Fish and Game, shows that Avenal is within the range of the following sensitive species.

- Giant Kangaroo rat (*Dipodomys ingens*)
- Short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*)
- Blunt-nosed leopard lizard (*Gambelia silus*)
- San Joaquin kit fox (*Vulpes macrotis mutica*)
- San Joaquin antelope squirrel (*Ammospermophilus nelsoni*)
- California jewel flower (*Caulanthus californicus*)
- San Joaquin wooly threads (*Lembertia congdonii*)

CDFG Species of Special Concern are those species with limited range in California and whose future status is unknown. Species of Special Concern that have been observed within the city limits are the American badger, golden eagle, prairie falcon, burrowing owl, and LeConte's thrasher.

Four of the five harvest species observed in Avenal are game animals regulated by the CDFG. These include the black-tailed jackrabbit, desert cottontail, mourning dove and California quail. The fifth harvest species is the bobcat, a non-game animal whose hunting is strictly regulated by the CDFG.

San Joaquin Kit Fox - The kit fox is endemic to central California and was once common in the southern San Joaquin Valley. Their population has declined dramatically due to habitat loss caused by urbanization and cultivation of their native habitat. The kit fox is listed as "threatened" by the State of California and "endangered" by the Federal government.

The San Joaquin kit fox is a burrow dweller and is known to occur in both of the natural communities found within the planning area. It is an opportunistic feeder, eating whatever prey species are locally abundant. Prey can include insects, birds, rodents and other small mammals.

Blunt-nosed Leopard Lizard - This lizard is a relatively large iguanid that inhabits sandy washes and open flat areas. It primarily feeds on insects, but has been known to eat small lizards and, rarely, plant material. The leopard lizard is also endemic to central California and has suffered from habitat loss pressures similar to those



affecting the kit fox. It is listed as endangered by both the State of California and the Federal government.

Biotic Surveys

In addition to the biotic survey completed by Hansen Biological Consulting (see Appendix B) for the Avenal General Plan, three previous biotic surveys were conducted on lands within the planning area. Hansen's Biological Consulting prepared a survey in 1989 for Avenal's Off-Road Vehicle Park, located north of the urbanized portion of Avenal; CH2M Hill conducted a survey for Western Drum in 1991 on land located east of State Route 33 and south of the urbanized portion of Avenal (near Avenal's old sewage treatment plant); and the State Department of Corrections conducted a survey in 1983 on land where the Avenal State Prison currently resides.

The Hansen Survey recorded five sightings of kit fox in 1989 (see Exhibit No. 11). Transect surveys during daylight hours resulted in observations of six known kit fox dens, one den complex with at least two entrances, and 121 potential kit fox dens. Kit fox tracks and scat were also observed during the transect surveys. The CH2M Hill Survey did not indicate the presence of kit fox in the survey area; however, fox scat and small canid bones were found along the northern boundary line of Section 27, Township 22 South, Range 17 East. The survey conducted by the Department of Corrections did not reveal any signs nor sightings of kit fox in the survey area.

The 1989 Hansen Survey identified a number of washes that were suitable as leopard lizard habitat. At least two leopard lizards were observed in the survey area and several lizard scats were found near the sightings. The CH2M Hill Survey did not find any evidence of leopard lizards. The survey did identify some land that could serve as habitat for this species near the northeast corner of Section 27. The survey conducted by the Department of Corrections did not reveal any signs nor sightings of leopard lizards in the survey area.

The 1989 Hansen Survey makes reference to hearing the call of the San Joaquin antelope squirrel; however, visual verification was not made. Neither the CH2M Hill or Department of Correction surveys observed this species or uncovered evidence of its existence. None of the surveys observed the Giant kangaroo rat, Short-nosed kangaroo rat, the California jewel flower, or San Joaquin wooly threads.

The 1992 Hansen Survey discovered potential kit fox dens and sighted a leopard lizard within the survey area, which included lands north of Hydril Road including the landfill site and the northern half of Section 16, north of the Avenal District Hospital. No other rare or endangered species were sighted within this survey area. The Consultant has recommended that plant surveys be conducted during the Spring months to confirm the absence of the California jewel flower and San Joaquin wooly threads.

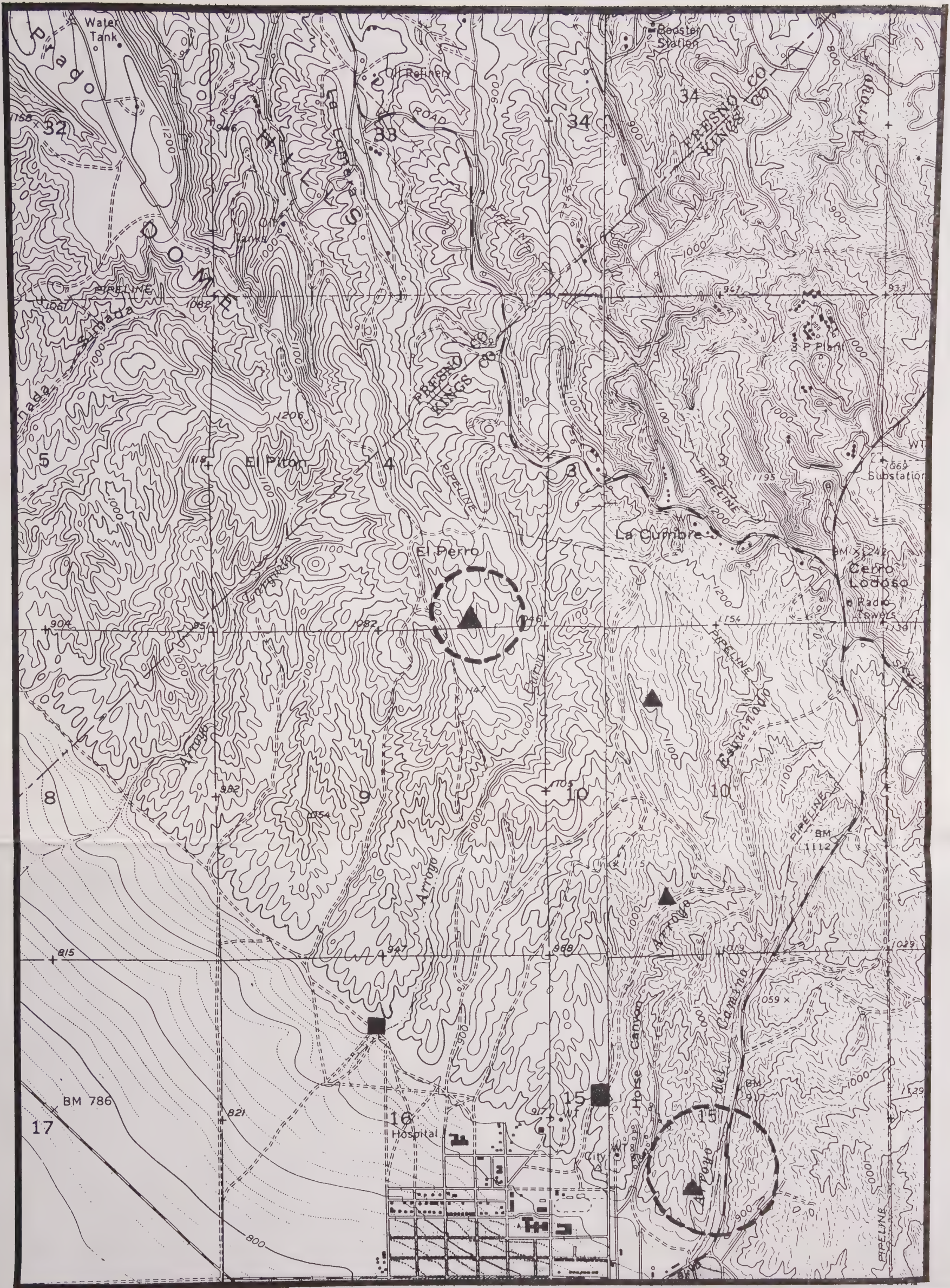
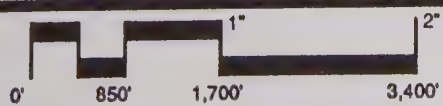


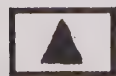
EXHIBIT 11

AVENAL GENERAL PLAN

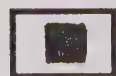


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BIOTIC SURVEY



SAN JOAQUIN KIT FOX SIGHTING



BLUNT-NOSED LEOPARD LIZARD
SIGHTING



KNOWN KIT FOX DENNING AREAS



D. CULTURAL RESOURCES

Human presence in the southern San Joaquin Valley probably dates back as far as 10,000 - 12,000 years. Artifacts found along the southern shore of Tulare Lake are similar to the Clovis points associated with the big game hunters of the Great Plains. Excavations of a site at Buena Vista Lake indicate that it may have been continuously occupied for more than 8,000 years. These cultures may represent the penetration of Penutian speaking people into Central California.

The Yokuts Indians occupied the entire San Joaquin Valley at the time of European contact. The Tachi tribe of the Southern Valley Yokuts occupied the northern and western shores of Tulare Lake and probably ranged as far as the eastern edge of the coast ranges. The Southern Valley Yokuts subsisted on fish, waterfowl, and mollusk gathered in the wetlands formed by Tulare, Buena Vista and Kern Lakes.

Several accounts of Yokuts activities on the west side of the Valley have been documented by Latta. Indians gathered asphaltum from the Coalinga area and used it for waterproofing equipment. An encampment located in Polvadero Gap, approximately six miles north of the planning area, was used by the Tachi for the hunting of antelope. This site, called *Sawkeu*, was chosen because good water was available there. Another site was located at Poso Chana on the eastern side of the Kettleman Hills. This site was used to meet and trade with coastal Indians.

A search of the California Archaeological Inventory database revealed that no known archaeological sites are located within the planning area or on adjacent properties. However, no recorded archaeological investigations have been conducted within the planning area. The lack of reliable water sources in the Kettleman Hills probably precluded the establishment of village sites, but hunting parties probably did visit the area.

American settlers arrived in the area in 1850 and established settlements east and south of the present town. David Kettleman took squatters rights to the Kettleman Hills and Plains in 1850, and perfected a patent on a parcel of land in 1852. The Sunflower Valley, which lies off Highway 41, was also settled in 1850. The Avenal Ranch, located at the southern end of the Kettleman Plain, was established in 1852. The early settler's engaged in cattle ranching and shepherding, which gradually developed into dry farming. The low productivity of this region kept the population sparse until oil was discovered in the Kettleman Hills.

On October 5, 1928 a gusher blew from the Milham Discovery Well, Elliott No. 1 at a depth of 7,800 feet. The town of Avenal was established shortly thereafter when Standard Oil Company laid out a townsite where drillers could live and supplies could be purchased. Section houses were hauled to Avenal from the oil fields in Taft and a boom town was born. The boom continued through the depression years and came to an end with the coming of World War II.



E. AIR QUALITY

The planning area lies within the San Joaquin Valley Air Basin. This air basin has been designated as a non-attainment area for failing to meet National Ambient Air Quality Standards (NAAQS) for two pollutants: ozone and particulates. Table No. 17 shows State and federal ambient air quality standards for these and other pollutants.

Table No. 17
Ambient Air Quality Standards

<u>Pollutant</u>	<u>Averaging Time</u>	<u>State Standards</u>	<u>National Standards</u>
Ozone	1-hour	.10 parts per million	.12 parts per million
Carbon Monoxide	8-hour	9.0 ppm (10 mg/m ³)	10 mg/m ³ (9 ppm)
	1-hour	20 ppm	40 mg/m ³
Nitrogen Dioxide	annual average	-	100 ug/m ³ (.05 ppm)
	1-hour	.25 ppm (470 ug/m ³)	
Sulfur Dioxide	24-hour	.05 ppmg (131 ug/m ³)	365 ug/m ³ (.14 ppm)
	1-hour	.25 ppm	
PM10	24-hour	50 ug/m ³	150 ug/m ³

Source: Air Resources Board, California Air Quality Data Summary

Accumulation of high concentrations of these pollutants has been attributed to the basin-like topography of the Southern San Joaquin Valley and the presence of a low level inversion layer for much of the year.

The Valley is an attainment area for carbon monoxide (CO), however, in localized conditions - along freeways or major intersections, traffic generated by development projects can contribute significantly to air quality impacts associated with excessive CO levels. Significant levels of CO can cause respiratory problems among humans.

Ozone is the product of the reaction of nitrogen oxides and reactive organic gases with sunlight. The major source of these gases is motor vehicle emissions. Ozone is a highly reactive oxidant which has been shown to damage vegetation and rubber products, and cause respiratory problems among humans, especially younger children and seniors who have respiratory problems. Studies have shown that crop losses due to ozone damage may be as high as 10 to 25 percent.



Particulates are fine particles of soot, dust, fumes and mist that are suspended in the air. Airborne particulates measuring less than 10 microns in diameter (PM-10) are capable of causing respiratory irritation because they enter the lungs and can become trapped. Major sources of particulate pollution in Kings County are agricultural practices, road dust, construction activities, wood burning stoves, and forest fires.

The Kings County Air Pollution Control District has an air monitoring station in Hanford. Measurements generated from this station are displayed in Table No. 18.

Table No. 18
Air Quality Monitoring Data, Hanford Station

<u>Year</u>	<u>Ozone</u>		<u>PM10</u>	
	<u>State</u>	<u>National</u>	<u>State</u>	<u>National</u>
1985	58 days	2 days	179 days	6 days
1986	66	2	180	6
1987	na	na	163	0
1988	86	6	117	0
1989	51	1	215	27
1990	na	0	na	na

Note: Days in which state and national air emission standards were exceeded at the Hanford monitoring station. The PM10 counts have been annualized.

Source: Kings County Health Department

The national air emission standard for ozone is 0.12 ppm while the California standard is 0.10 ppm. In 1989, data gathered at the Hanford air quality monitoring station showed that the National standard was exceeded on one day and the State standard was exceeded on 51 days.

Particulate pollution is measured as PM-10. The national air emission standard for PM-10 is an annual average level of 50 micrograms per cubic meter. The California standard is 30 micrograms. Measurements of PM-10 at the Hanford station showed that the National standard was exceeded 27 days in 1989 while the State standard was exceeded 215 days.

The national standard for CO is 9.5 ppm while the California standard is 9 ppm. The Hanford station does not monitor CO levels.



1988 consisted of 8,141 one hour observations. The NAAQS was exceeded on three days for a total of six hours. The NAAQS for ozone is .12 ppm averaged over a one hour sampling period. The State standard of .09 ppm was exceeded on 34 days for a total of 86 hours.

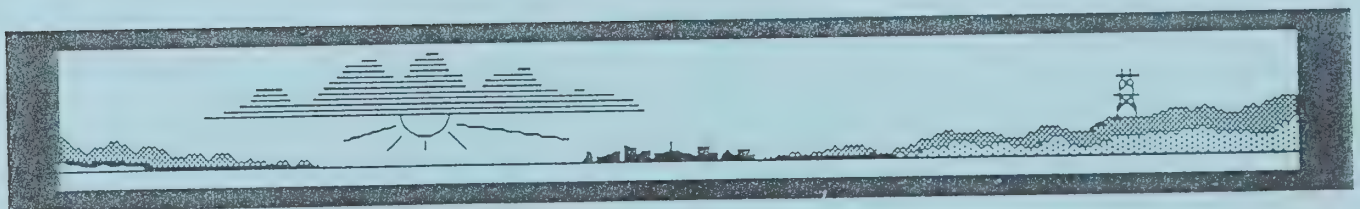
F. WATER QUALITY

Potential sources of groundwater that can be utilized for agricultural uses do exist within the planning area. The consolidated rocks of the San Joaquin formation and the poorly sorted sediments of the Tulare formation are of such low permeability that recharge from surface water sources is unlikely. Connate water (water which is trapped at the time of deposition) does occur in small quantities within this strata, but is highly saline.

The poor quality of groundwater on the Kettleman Plain makes it unsuitable for domestic uses. High concentrations of dissolved solids, primarily sulfate and sodium, are present in water from the Avenal area. The presence of sulfate is attributed to recharge through the underlying marine and continental deposits. Chemical analyses of a well located approximately three miles south of the planning area (T. 22, R. 17, Sec. 26E) resulted in 1720 parts per million (ppm) total dissolved solids. The sulfate component of this sample was 992 ppm and the sodium component was 232 ppm.

CHAPTER 4

RISK OF UPSET





CHAPTER 4 • RISK OF UPSET

A. SEISMIC

Avenal lies within a seismically active area. An earthquake measuring 6.7 on the Richter scale (Rs) occurred in the Coalinga area in 1983, while a quake of 5.5 Rs occurred in the Avenal area in 1985. This quake had its epicenter five miles northeast of Avenal in the Kettleman Hills. This quake caused widespread cracks in buildings and pavement and broke numerous windows. Structural failures did not result from this event.

Seven potentially active faults are located within 70 miles of Avenal, including a thrust fault lying 6-8 miles below the central axis of the Kettleman Hills anticline. This thrust fault appears to have caused the Coalinga and Avenal earthquakes.

A study prepared by Golder Associates for the Chemical Waste Management, Kettleman Hills facility, determined that the thrust fault in the Kettleman Hills poses the greatest seismic threat to the area. Maximum credible earthquakes (MCE's) from this fault have been predicted to range from 6.5 to 7.0 on the Richter scale. Peak ground accelerations at the Chem Waste facility, located approximately seven miles southeast of Avenal, are predicted to be .43 gravities (g). This figure represents the maximum force of ground motion caused by a MCE. A probabilistic assessment of ground acceleration determined that the peak acceleration of .43 g had a 2 percent chance of being exceeded in a 20-year period and a 5 percent chance of being exceeded within a 50-year period. This assessment also determined that, within a 50-year period, there is a 50 percent probability of ground accelerations exceeding .16 g and a 10 percent chance of accelerations exceeding .34g. These figures should be used in building design criteria to prevent structural failure from groundshaking.

The San Andreas Fault, located approximately 15 miles southwest of the Avenal, also poses significant seismic risk. The Slack Canyon - Highway 58 segment of this fault is capable of producing an MCE with a magnitude of 7.2 at a recurrence interval of 140 years. The Slack Canyon - Cholame segment is very active and can produce an MCE with a magnitude of 6.3 at a recurrence interval of 22 years. Ground acceleration from earthquakes occurring along the San Andreas Fault are not predicted to exceed .21 g at the Chem Waste Facility.



The Five Counties Seismic Safety Element places Avenal within the C1 Seismic Zone, characterized by firm to hard sedimentary rocks. (24) Primary hazards due to groundshaking are "moderate" to "high" because of the proximity to the San Andreas Fault. Landslides are the only significant secondary seismic hazard. They pose a "moderate" to "high" threat for development located on steeply sloping topography. The Seismic Safety Element recommends that the Uniform Building Code, Zone III building standards be required for all structures and that a 2x factor be used for public structures.

B. NOISE

Based on discussions with City staff, the requirements of the Government Code and field studies conducted during the preparation of the Noise Element, it was determined that traffic on local roadways is a potentially significant source of community noise within the City of Avenal. Roadways of concern include State Routes (SR) 33 and 269 and Interstate 5 (I-5). There is also an airport located within the community, but the number of daily operations is too low to create a noise level in excess of applicable noise level standards in areas where noise-sensitive land uses are located.

A community noise survey was conducted in the City during June 1992 to document background noise levels in areas where noise-sensitive land uses are located. Short term monitoring was conducted once during the daytime and once during the nighttime (10:00 p.m. - 7:00 a.m.) so that estimates of the L_{dn} (day/night average sound level) could be prepared. One long-term site was established to record the variation of noise levels through a full 24-hour period. The data collected during the survey included the L_{eq} (equivalent sound level) and the observed minimum and maximum noise levels. Results of the community noise survey indicate that existing background noise levels in many areas of the City that contain noise-sensitive land uses are relatively quiet. Results of the noise survey are shown in Table 19.



Table No. 19
Summary of Community Noise Survey Data

Site #	Location	Level, dBA				
		L_D	L_N	L_{max} (Source)	L_{min} (Source)	L_{dn}
1	Avenal City Park	51	39	61 (Children)	35 (Crickets)	48-52*
2	Avenal District Hospital	42	38	52 (Traffic)	33 (Crickets)	43-47*
3	Avenal Elementary School	52	38	67 (Traffic)	35 (Crickets)	49-53*
4	St. Joseph's Catholic Church	43	38	53 (Traffic)	36 (Unknown)	44-48*
5	City Water Tank #2	51	49	62 (Traffic)	41 (Unknown)	54-58*
A**	1013 Lassen	46	39	70 (Unknown)	27 (Unknown)	47
L_D = L_{eq} for one 15-minute sample obtained between 7:00 a.m. and 10:00 p.m. except for Site A where 24-hour monitoring was conducted. L_N = L_{eq} for one 15-minute sample obtained between 10:00 p.m. and 7:00 a.m. except for Site A where 24-hour monitoring was conducted. * L_{dn} estimated from L_D and L_N ** 24-hour monitoring site. Source: Brown-Buntin Associates, Inc.						

C. FLOODING

Portions of Avenal are within the 100-year floodplain as identified by the Federal Emergency Management Agency (FEMA) on their Flood Insurance Rate Map (see Exhibit No. 12).

During major storm events several arroyos upstream from Avenal are subject to flash flooding. Numerous accounts of flooding along Santa Clara Street below Arroyo Esquinado have been reported by Avenal residents. Arroyo del Camino is identified as a flood hazard on the FEMA flood insurance rate maps. This flooding, however, may be attributable to poorly maintained culverts and drainage ditches.

At least ten distinct watersheds drain into the urbanized portion of Avenal. These drainages flow through or near the City of Avenal and onto the Kettleman Plain. A 1979 study of the drainage problem by McKee-Zumwalt and Associates calculated the

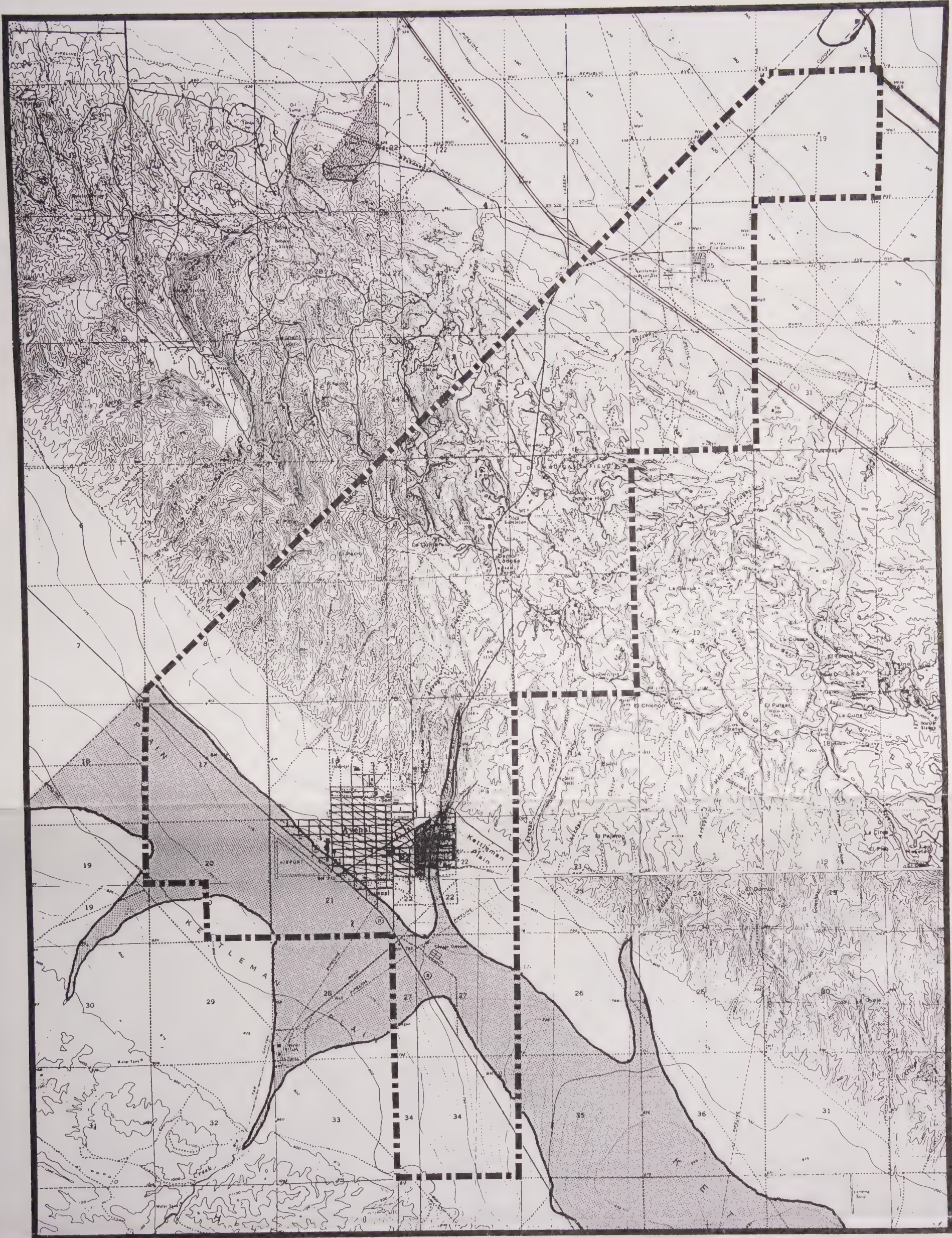
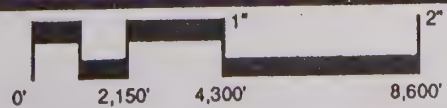


EXHIBIT 12

AVENAL GENERAL PLAN

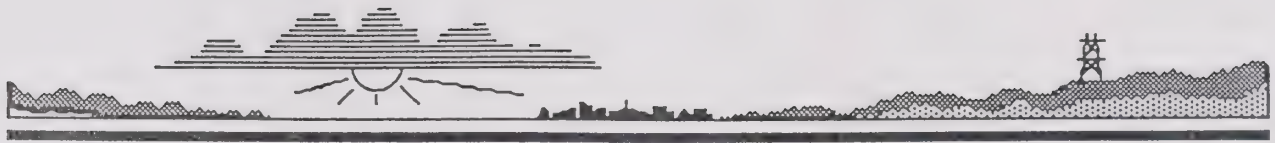


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FLOODING



Areas subject to flooding resulting from a 100-year-intensity storm event



potential runoff from these watercourses during a 10-year and a 100-year storm event. The findings of this study are listed in Table No. 20. The drainage of Camino Esquinado poses the greatest flood threat to the City. This watershed is capable of producing flows of 102 c.f.s. during a 10-year storm and 155 cfs during a 100-year event.

Table No. 20
Watershed Data

Drainage Unit	Drainage Area	Peak Flows	
		10-Year Storm	100-Year Storm
#1	306 ac	NA	NA
#2	148 ac	NA	NA
#3	265 ac	NA	NA
#4	436 ac	97 cfs	149 cfs
#5	160 ac	NA	NA
#6	177 ac	44 cfs	66 cfs
#7	74 ac	23 cfs	36 cfs
#8	23 ac	NA	NA
#9	507 ac	102 cfs	155 cfs
#10	69 ac	22 cfs	35 cfs
#11	577 ac	87 cfs	126 cfs

Source: McKee-Zumwalt, 1979



SECTION 3

DRAFT
ENVIRONMENTAL
IMPACT REPORT

CITY OF AVENAL
GENERAL PLAN
DRAFT
ENVIRONMENTAL IMPACT REPORT

Prepared for

City of Avenal

Prepared by

Collins & Associates, Planning Consultants
1992

CITY OF AVENAL

GENERAL PLAN

**DRAFT
ENVIRONMENTAL IMPACT REPORT**

Prepared for

City of Avenal

Prepared by

**Collins & Associates, Planning Consultants
1992**

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Appendix A: AIR QUALITY MODEL RESULTS (URBEMIS 3)

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1.0 INTRODUCTION

1.01 Introduction

The Avenal General Plan includes six State-mandated general plan elements - land use, circulation, conservation, open space, noise and safety. Under the California Environmental Quality Act (CEQA), the Avenal General Plan is considered a "project." The "project area" (after this referred to as planning area) is the land within the Avenal Sphere of Influence. Avenal is situated in the Southern San Joaquin Valley where State Highways 269 and 33 intersect.

As the lead agency, the City of Avenal has determined that this project will have a "significant" impact on the environment and a draft environmental impact report (DEIR) has been prepared.

The City sent a Notice of Preparation (NOP) to state responsible and trustee agencies to solicit their input on the scope and content of the DEIR. Their comments and concerns were considered during the preparation of the DEIR.

1.02 Purpose

The purpose of the DEIR is to inform the public and local decision-makers of the potential environmental effects associated with the implementation of the General Plan. In addition, this DEIR provides the following: identifies mitigation measures that will reduce or avoid the environmental effects caused by the General Plan, specifies programs that will monitor the lead agency's compliance with the adopted mitigation measures, and specifies alternatives to the proposed General Plan.

Section 15370 of CEQA states that mitigation includes:

"(a) Avoiding the impact altogether by not taking a certain action or parts of an action. (b) Minimizing effects by limiting the degree or magnitude of the action and its implementation. (c) Rectifying the impact of repairing, rehabilitating, or restoring the impacted environment. (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action. (e) Compensating for the impact by replacing or providing substitute resources or environments."

Public Resources Code Section 21081.6 indicates that when a city is adopting a general plan for which an EIR was prepared, it must also adopt a reporting or monitoring program for ensuring compliance with adopted mitigation measures.

Alternatives to the General Plan will range from the "no project" alternative, which maintains the project area under its current general plan designations, to the "environmentally preferred alternative," which proposes a combination of general plan designations based primarily on environmental considerations.

1.03 Specificity

Section 15146 of the CEQA Guidelines states that a DEIR need only be as specific as the project being proposed. In other words, this document will describe in broad terms the environmental effects caused by the General Plan. Furthermore, it will discuss secondary environmental effects caused by the implementation of the General Plan, such as growth-inducing effects related to services and infrastructure.

1.04 Tiering

CEQA authorizes the use of this General Plan EIR when Avenal is considering other discretionary projects that follow approval of, and are consistent with, the General Plan including, zoning ordinance amendments, conditional use permits, subdivisions, and capital expenditure projects.

Section 15152 of the CEQA Guidelines shows that a City may use a procedure called "tiering" to streamline the CEQA process. Tiering as defined by Section 15385 of the Guidelines means:

"The coverage of general matters and environmental effects in an EIR prepared for a policy, plan, program or ordinance followed by narrower or site-specific EIRs that incorporate by reference the discussion in any prior EIR which concentrate on the environmental effects that (a) can be mitigated, or (b) were not analyzed as significant effects on the environment in the prior EIR."

Avenal has three options under the tiering process in terms of the environmental review on future projects. (1) If the General Plan EIR addresses a proposed project's potential environmental effects, the City can adopt the General Plan EIR for the project. (2) If the General Plan EIR did not address the proposed project's environmental effects and the initial study indicated the project would not have a significant impact on the environment, the City can prepare a negative declaration for the project. (3) If the General Plan EIR did not address the proposed project's environmental effects and the initial study indicated the project would have a significant impact on the environment, the City shall prepare a supplemental EIR that discusses the environmental effects not covered in the General Plan EIR. The supplemental EIR can refer to the General Plan EIR for a discussion of the environmental effects already covered in this EIR.

Tiering cannot be used for proposed projects that are inconsistent with the general plan or zoning ordinance.

2.05 Intended Use of EIR

The City of Avenal is the lead agency on the General Plan. Future discretionary actions related to the adoption of the General Plan, for which the General Plan EIR can be used, include zoning ordinance amendments, annexations, capital improvement projects and individual development projects, such as subdivisions, site plans and conditional use permits.

The City of Avenal will be the only public agency using this EIR in their decision-making process; yet, other public agencies may use it as a reference document during their deliberations on capital improvement and land acquisition programs, district boundary studies, or facility planning reports.

1.06 Format

The City has combined the DEIR and General Plan into one document, containing three sections. Section 1 contains the general plan elements - land use, circulation, open space, conservation, safety and noise; Section 2 the existing conditions (environmental setting) in the Avenal area; and Section 3, the environmental impact analysis - environmental impacts, mitigation measures, and project alternatives.

To insure that this DEIR is a meaningful document for decision-makers and the public, the environmental impact analysis section of this report has been formatted to improve understanding and continuity. This section of the report will be formatted as follows:

4.0 ENVIRONMENTAL IMPACT ANALYSIS

4.01 ENVIRONMENTAL FACTOR

A general description of the environmental factor and pertinent definitions will be included in this subsection.

4.011 Existing Conditions

Existing conditions that specifically exist in and around Avenal are described in Section 2 of this document.

4.012 Environmental Impact

This subsection will describe the environmental impact caused by the project.

4.013 Mitigation Measures and Monitoring

This subsection will specify measures - development standards, programs, or capital improvement projects - that will reduce or avoid the environmental impact. The Alternatives to the Proposed Action section of the DEIR also may

be referenced in this subsection since alternatives to the proposed action also can reduce or avoid certain impacts.

Mitigation monitoring identifies who is responsible for insuring that the mitigation measures will be implemented and over what time period.

4.014 Residual Impact

This subsection will detail the residual level of environmental impact after mitigation measures and/or alternatives to the proposed project are implemented. If impacts cannot be avoided or reduced to an insignificant level the environmental impact will be deemed an adverse unavoidable impact.

2.0 PROJECT DESCRIPTION

2.01 Project

The term "project" shall refer to the Avenal General Plan, a single document that contains six of the seven State-mandated general plan elements - land use, circulation, conservation, open space, noise, and safety. The Housing Element is being prepared by Kings County and is not included in this document, and the Conservation and Open Space elements have been combined into one element.

The General Plan determines the rate, direction, intensity and density of urban growth for a city while delineating the location, design and size of infrastructure and facilities that will service this growth. The General Plan also determines where growth should not occur due to hazardous conditions, natural resources or other conflicting problems.

An abbreviated description of each of the elements is described below. Section 1 of this document contains all six elements in their entirety.

Land Use Element - designates the general distribution and location of land for housing, business, industry, open space, including agriculture, natural resources, recreation, public buildings, solid and liquid waste disposal facilities, and other categories of public and private uses of land. The element also specifies standards of population density and building intensity.

Circulation Element - delineates the general location and extent of existing and proposed major roadways, including freeways, arterials, and collectors; transportation routes, and other local public utilities and facilities. The Element also identifies pedestrian trails and bike routes.

Conservation, Open Space, Parks and Recreation Element - provides for the conservation, development, and utilization of natural resources, including water, forests, soils, rivers, wildlife, minerals, and other natural resources. Also, seeks to manage open space for outdoor recreation, including parks, recreational facilities, and scenic highway corridors; and for protection of the public's health and safety, including regulation of open space because of flood, earthquake or hazardous soil conditions.

Safety Element - provides for the protection of the community from unreasonable risks associated with earthquakes, flooding, subsidence, and urban and wildland fires.

Noise Element - identifies and appraises noise problems in the community. It includes implementation measures and possible solutions that address existing and foreseeable noise problems.

The above elements can be organized into one of three general categories. Category one, includes the elements that guide the physical development of Avenal, including the location, mixture, density and intensity of various land uses. Included in this category are the land use and the conservation, open space and parks and recreation elements.

Category two, includes the element that supports Avenal's land use system - the circulation element.

Category three, includes elements that contain policies or programs that protect or enhance the public's health, safety or welfare. They include the noise and safety elements. The safety element insures that property and the public will not be exposed to unreasonable risks related to seismic, geologic, flooding, and fire hazards. The noise element contains policies and standards that guide the location and site and building design of land uses that may be exposed to excessive noise.

2.02 Location

Avenal is located in western Kings County in the southern portion of the San Joaquin Valley. The urbanized portion of Avenal is located around the intersection of State Highways 33 and 269. It is ten miles southeast of the City of Coalinga and 25 miles southwest of Hanford, the county seat (see Exhibit No. 1)

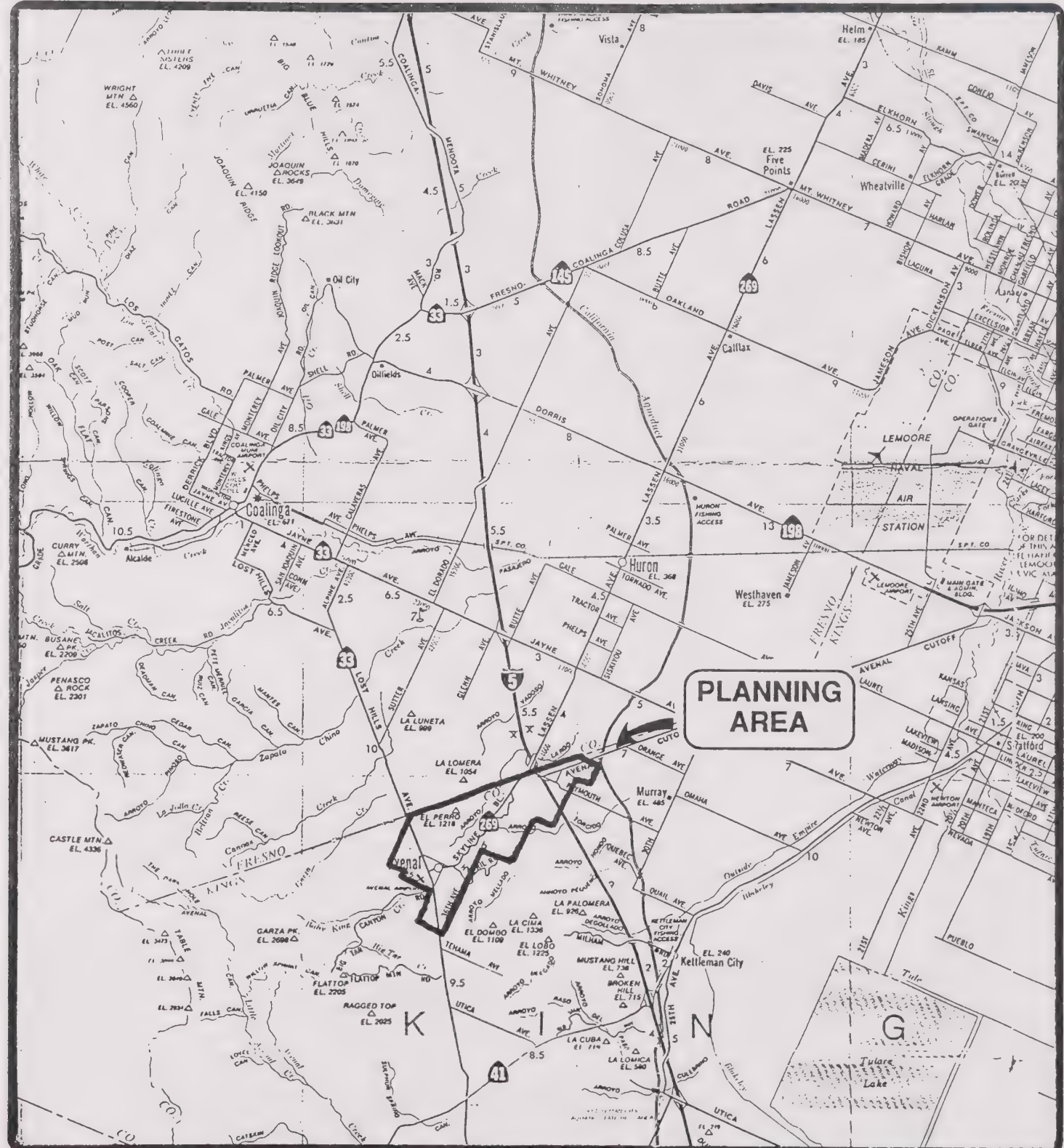
2.03 Planning Area

The planning area includes lands within Avenal's city limits and sphere of influence. The city limits contains 19.5 square miles of which, 2.5 square miles is urbanized. The sphere of influence, which is almost co-terminus with the city limits, contains about 20.5 square miles (see Exhibit No. 2).

The planning area encompasses three distinct topographic regions - the Kettleman Plain, the Kettleman Hills and the San Joaquin Valley floor. About 50 percent of the planning area is located in the Kettleman Hills, 40 percent on the Kettleman Plain and 10 percent on the Valley floor.

2.04 Planning Period

The Avenal General Plan is designed to guide development, manage resources, protect the physical and human environment and promote economic activity in the City of Avenal to the year 2010. This 18-year plan will provide long-term policy for day-to-day planning decisions by local decision-makers.



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PLANNING CONSULTANTS

REGIONAL LOCATION

EXHIBIT NO. 1

CITY OF AVENAL

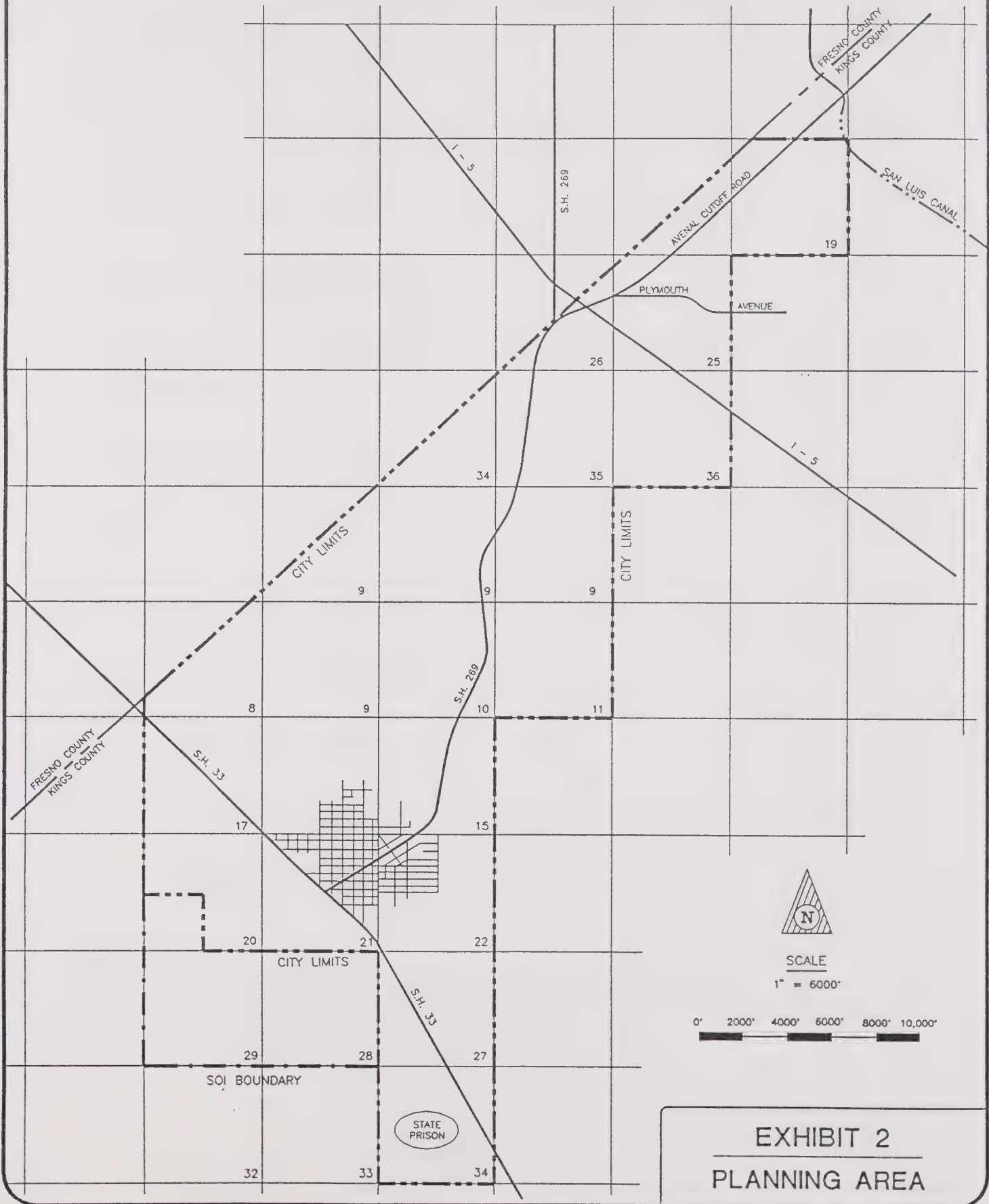


EXHIBIT 2
PLANNING AREA

2.05 Project Objectives

The Avenal General Plan is intended to meet the following objectives.

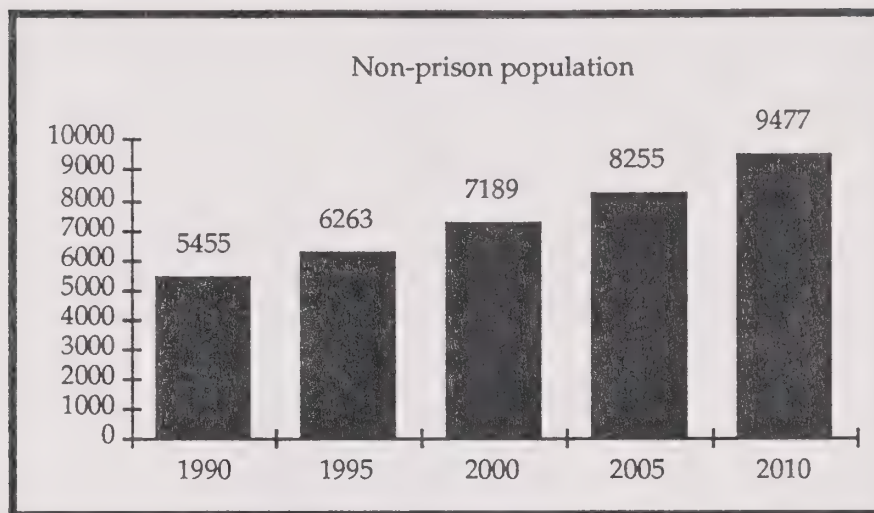
- Recognize the changing conditions and trends in the planning area and make appropriate amendments to the General Plan.
- Project the future growth of the community and make provision for this growth in the plan.
- Provide for a greater variety of and locational choices for housing, commercial and industrial developments.
- Achieve a balanced and efficient land use pattern by basing proposed land use configurations on the development potential of sites and the prevention of land use conflicts.
- Provide for adequate public facilities at appropriate locations to meet the needs of the projected population.
- Provide a desirable land use framework upon which infrastructure planning is based.
- Promote economic development in the community by designating specific sites for industrial parks and shopping centers.
- Recognize past land use approval actions and adopted land use policies and integrate them into the General Plan.
- Make necessary changes in the General Plan to make it consistent with the City's Zoning Ordinance.
- Provide a safe and pleasant environment and enhance property values throughout the community by avoiding and eliminating land use conflicts.

2.06 Project Information

Population

Avenal's projected population over the planning period is shown in Figure No. 1. It is estimated that by the year 2010 based on a 2.8 percent annual growth rate, Avenal's non-prison population will reach 9,477.

Figure No. 1
Avenal Population Projections



Source: U.S. Census, 1990; and Collins & Associates, 1992

Land Demand

The amount of additional land required for future urban uses under the General Plan is primarily based on population projections and secondarily, on the amount of land in each land use category needed to support the needs of the projected population. Some land requirements are not based on population but on other factors, such as the traffic counts along Interstate 5 as in the case of highway commercial acreage or protection of rare and endangered plant and animal species as in the case of land dedicated for a nature preserve.

The planning area for the City of Avenal encompasses about 11,844 acres. In 1992, only about 2169 acres, or 18 percent of the planning area, was committed to urban uses or support facilities, including the landfill, sewage treatment plant and airport. The balance of the land was utilized as open space - grazing lands, oil and gas exploration, intensive agriculture and right-of-way.

The General Plan proposes that by 2010, 695 acres of additional land will be urbanized bringing the total to 2864 acres, or 24 percent of the planning area. This 2864 acres will support the additional 4,022 persons that are projected to move to Avenal over the next 18 years. Table No. 1 provides a breakdown of the planning area by proposed land use designation. Exhibit No. 3 reveals the location and arrangement of these land uses and shows the street system that serves these land uses.

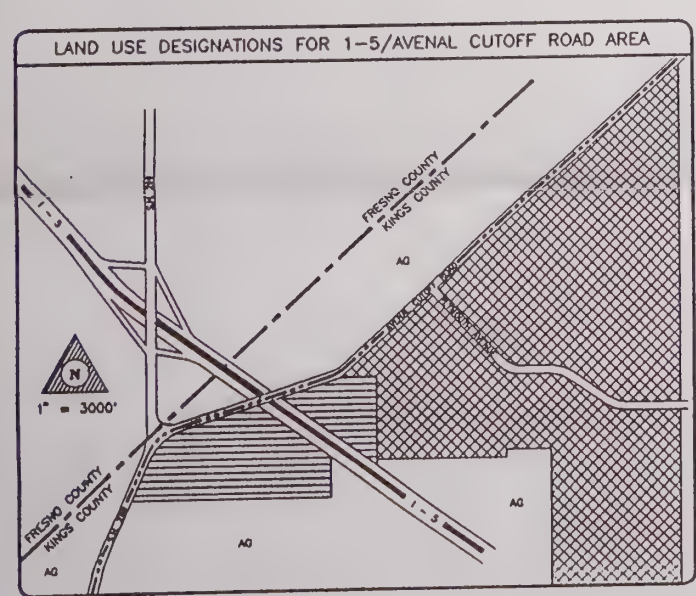
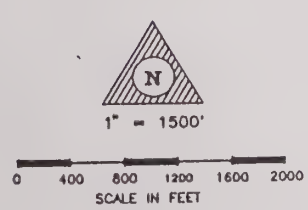
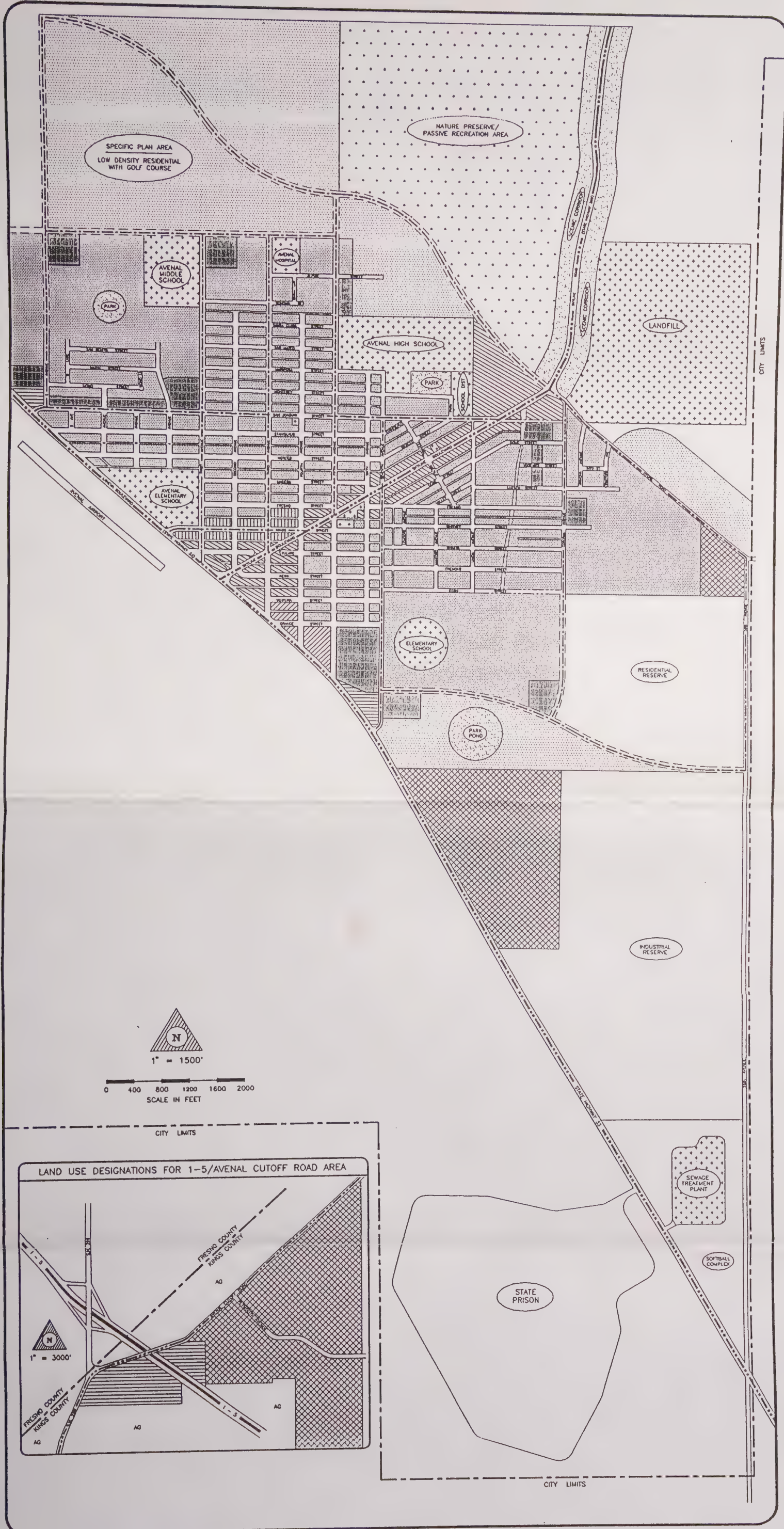


EXHIBIT 3

LAND USE CIRCULATION ELEMENT

LAND USE DESIGNATIONS

- RESIDENTIAL
- LOW DENSITY
 - MEDIUM DENSITY
 - HIGH DENSITY

- COMMERCIAL
- COMMUNITY
 - DOWNTOWN
 - SERVICE
 - HIGHWAY

- OPEN SPACE
- PARK
 - SCENIC CORRIDOR
 - NATURE PRESERVE

- INDUSTRIAL
-

- PUBLIC FACILITIES
-

CIRCULATION DESIGNATIONS

- FREEWAY
- ARTERIAL
- COLLECTOR

AVENAL GENERAL PLAN

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Table No. 1
Projected Land Use Acreages

Land Use Category	1992 Acreage	2010 Acreage	Difference
single family residential	239	469	230
multi-family residential	34	57	23
mobile home parks	1	5	4
residential "reserve"	0	145	145
schools	72	87	15
churches	4	7	3
parks	5	29	24
nature preserve	0	285	285
golf course	0	80	80
governmental	14	24	10
Avenal State Prison	626	626	0
Kettleman Line School	42	42	0
Old Sewage Treatment Plant	106	56	-50
New Sewage Treatment Plant	15	15	0
P.G. & E	43	43	0
Airport	83	83	0
Landfill	160	160	0
Commercial	39	107	68
Industrial	2	102	100
Vacant	250	80	-170
Agriculture	3500	3029	-471
Grazing, oil and gas explor.	5055	4760	-295
Right-of-way	1555	1555	0
TOTAL	11844	11844	

Source: Collins & Associates, 1992

3.0 ENVIRONMENTAL SETTING

The description of the environmental setting for the planning area is contained in Section 2 of this document. This section provides information on the human and physical environments, resources and identifies lands in the planning area that at risk of upset due to flooding, earthquakes or noise.

4.0 ENVIRONMENTAL IMPACT ANALYSIS

The environmental impacts discussed in the DEIR were identified through the Notice of Preparation (NOP) and initial environmental study process. Each factor discussed in this part of the DEIR will be addressed under three subheadings - environmental impact analysis, mitigation measures and monitoring, and residual impacts. Existing conditions for each environmental issue are contained in Section 2 of this document.

RISK OF UPSET

Risk of upset involves environmental hazards that can potentially cause loss of property or life, including forces like fire, earthquakes, and flooding, or nuisances that can disrupt the physical or mental well-being of persons, such as noise. These types of risk are discussed in Avenal's Safety and Noise Elements. Contained in these elements are policies and action programs that will reduce the risk associated with these hazards and nuisances.

4.01 SEISMIC HAZARDS

In 1973, five counties in the southern San Joaquin Valley jointly completed the *Five County Seismic Safety Element*. Kings County was one of the five counties. The Element identified existing seismic and geologic hazards within Kings County.

Seismic hazards, such as earthquakes, can cause loss of human life and property damage, disrupt the local economy, and undermine the fiscal strength of a community. Geologic hazards, including settlement and liquefaction, can cause building and infrastructure damage.

4.011 Existing Conditions

Section 2 of this document provides a description of seismic conditions in the planning area.

4.012 Environmental Impacts

The planning area is situated in a region where strong ground shaking can occur. Examples have been the 1983 Coalinga earthquake, which had a Richter scale measurement of 6.7, and the 1985 Avenal earthquake, which had a 5.5Rs.

Impacts resulting from a future earthquake could include damage to buildings, infrastructure, and secondary impacts, such as the financial implications to Avenal for repair and/or replacement of infrastructure.

Landslides and mudslides are secondary seismic hazards. Development that is situated on steep slopes, exceeding 30 percent, could be adversely impacted by

landslides. Development at the bottom of arroyos could be exposed to mudslides when heavy precipitation occurs in the watershed of the arroyo. In the case of both hazards, the public's safety could be adversely affected if development is improperly sited in areas where these hazards exist.

4.013 Mitigation Measures and Monitoring

Policies and action programs contained in the Avenal Land Use and Safety Elements will reduce the aforementioned environmental impact to an "insignificant" level. The Safety Element's action programs recommends the following:

1. That the Uniform Building Code, Zone IV, building standards be required for all structures and that a 2X factor be used for public structures.

The Land Use Element precludes urban development on steep slopes and in the bottom of arroyos.

Mitigation monitoring - The building and planning departments, through the site plan review process and building inspection, shall insure that plans for new development are consistent with the above action programs.

4.014 Residual Impact

Seismic hazards have been reduced to an insignificant level.

4.02 FLOODING

Flooding can be caused by water spilling over the banks of a watercourse, water flowing from an arroyo that has experienced intense rainfall, or water that ponds due to insufficient drainage facilities. The first two types of flooding can threaten life and damage property while the third type of flooding is more of a nuisance and generally localized. It can sometimes cause minor property damage.

4.021 Existing Conditions

Section 2 of this document provides a description of flooding conditions in the planning area.

4.022 Environmental Impact

Portions of the planning area are subject to flooding, which is caused by either runoff from the Kreyenhagen Hills or flashfloods emanating from arroyos north of Avenal.

Flood waters from the Kreyenhagen Hills are shallow flows that spread over lands located south of State Highway 33. Their adverse impact on life and property are

minimal. They present more of a nuisance problem to motorists that have to contend with a flooded highway or to the farmer who must wait for the flood water to recede.

Flash floods can emanate from the ten arroyos, located generally north of Avenal, during times of heavy rainfall. The force of the water and the sediment being carried by the water can damage buildings and other improvements if they are in the path of these flows. It is unlikely that there is a potential of loss of life resulting from these flash floods in that they are very short-lived and their rates of flow are relatively small, 155 cfs for a 100-year event.

4.023 Mitigation Measures and Monitoring

Policies and action programs contained in the Avenal Land Use and Safety Elements will reduce the aforementioned environmental impact to an "insignificant" level. The Safety Element recommends the following:

1. That the ground floor elevation of inhabited buildings shall be above the flood elevation lines identified on FEMA's Flood Insurance Rate Map.

Mitigation monitoring - The Avenal building department will insure that the builder submits a "certificate of elevation", which indicates that the ground floor elevation is above the 100-year flood elevation line for the subject site.

The Land Use Element avoids the potential for urban development-flooding conflicts by precluding development on lands south of State Highway 33 and adjacent to Arroyo del Camino. These lands are designated for agriculture and open space, respectively.

4.024 Residual Impact

Flooding hazards have been reduced to an insignificant level.

4.03 NOISE

Noise is defined as unwanted or excessive sound. Sound is a variation in air pressure that the human ear can detect. This pressure is measured within the human hearing range as decibels on the A scale (dBA). As the pressure of sound waves increases the sound appears louder and the dBA level increases logarithmically. On the average, a person will describe an activity with a dBA ranging from 85 to 105 as "very loud" while a noise level of 20 to 40 dBA will be described as "faint". A dBA of 130 has been identified as the threshold of pain; 0 dBA as the threshold of audibility.

When measuring highway traffic noise, the State Office of Noise Control, uses cumulative noise exposure information in terms of day-night average noise level L

(dn) contour values. A 60 dB (L10) noise contour along a highway would represent a 60 decibel reading that is occurring ten percent of the time when measurements were being conducted.

Persons that are living, working or staying in buildings that are not properly insulated or designed to attenuate noise can be adversely impacted by noise emanating from roadway-related noise. These persons can suffer from loss of sleep, stress or interference with speech, recreation, and concentration.

Real estate values can also be adversely impacted by noise. This impact can lead to a blighted condition because persons may be unwilling to invest, maintain or upgrade property that is noise-impacted.

4.031 Existing Conditions

Section 2 of this document provides a description of noise conditions in the planning area.

4.032 Environmental Impact

The most significant levels of noise in Avenal are generated by traffic on State Highway 33, Highway 269 and Interstate 5. As average daily traffic counts and percentage of trucks along these roadways increase, noise levels will also increase.

Noise impacts become significant when noise sensitive land uses, such as residential dwellings, schools and hospitals, are situated along heavily traveled roadways. Few noise sensitive uses in Avenal are located along these types roadways. The Avenal Elementary School and residential dwellings north of the school, and an apartment complex south of Skyline Boulevard, front onto Highway 33. Fortunately, traffic counts on Highway 33 are low and therefore do not generate excessive levels of noise. In the case of the elementary school, the school building is separated from the Highway 33 by playing fields, which provides a spatial separation that attenuates the noise generated by traffic along this highway.

Except for the cases mention above, land uses along Highway 33, Highway 269 and Interstate 5 include agriculture, commercial and industrial uses. These land uses are not noise sensitive and therefore, by their location on these roadways, do not represent a development-noise conflict.

4.033 Mitigation Measures and Monitoring

Noise from transportation routes can be mitigated in one of three ways: reduce the noise at the source by improving pavement, reducing average daily traffic counts; reduce the noise at the receiving point by installing noise attenuating sound walls, landscaping, earthen berms, or insulating and designing buildings so that noise levels are reduced in the interior; or increase the distance between the noise source and the receiving point by establishing building setback distances from a roadway.

Policies and action programs contained in the Avenal Land Use and Noise Elements will reduce the aforementioned environmental impact to an "insignificant" level. The Noise Element recommends the following:

1. That the City of Avenal adopt a Community Noise Ordinance. The Planning Director shall insure that the model noise ordinance is introduced to the Planning Commission and City Council for review and adoption.
2. The City of Avenal, through the site plan review process, should require residential development and other noise-sensitive uses, located on Highways 33 and 269, to install walls and landscaping and increase setback distances between the use and the highway.
3. During site plan review, the building design of noise sensitive land uses should be reviewed to insure that window and door openings do not face Highways 33 and 269.

Mitigation monitoring - The planning director and building official shall insure that noise sensitive development proposed along Highways 33 and 269 shall be designed to minimize noise impacts and constructed in accordance with noise attenuating measures contained in the Uniform Building Code.

The Land Use Element designates a minimal amount of land along Highways 33 and 269 for new residential development and other noise-sensitive uses.

4.034 Residual Impact

Potential noise impacts have been reduced to an "insignificant" level.

RESOURCES

The Avenal General Plan can potentially have an adverse impact on the resources of the planning area, including biotic, cultural, scenic and agricultural.

4.04 AGRICULTURAL RESOURCES

Agricultural land is a renewable natural resource. Consumption of this resource is considered to be an irreversible environmental impact. Conversion of prime agricultural land to non-agricultural uses or impairment of its productivity is considered a significant environmental impact by CEQA.

The California Department of Resource Conservation defines prime farmland as land having the best combination of soil quality, growing season, and water quality. Within the planning area, prime farmland would be those lands having soils with a soil capability class of I or II, a Storie Index greater than 85, and a permanent source of irrigation water. Unique farmland has special combinations of soil quality, location, growing season and water supply needed to produce specific high value crops.

In 1989, Kings County had 681,000 acres under agricultural production. The top three income producing agriculture industries that year were cotton/lint, \$215 million; milk, \$159 million; and cows/calves, \$60 million.

A recent report released by the State Department of Conservation indicated that between the years 1984 to 1988, Kings County lost 8,632 acres to urbanization. This five-county study, which included Stanislaus, Merced, Madera, Fresno, and Kings counties, showed that Fresno County only lost 3,898 acres during that time period. Conversations with Kings County officials implied that the Department's figures were incorrect and that the urbanization figure was closer to 3500 acres, Avenal prison, 650 acres; Coalinga prison, 900 acres; Hanford, 1000 acres; Lemoore, 500 acres; and miscellaneous conversions, 500 acres.

The Department of Conservation's report also indicated that 4,113 acres in Kings County reverted to a "not actively farmed" status. These uses included rural ranchettes, dairy improvements, and other non-farm uses.

On a regional scale, the American Farmland Trust has estimated that from 1975 to 1989 urbanization has claimed 1000 to 3600 acres per year in the ten-county Central Valley. By 2010, the Trust estimates that another 360,000 will become urbanized.

4.041 Existing Conditions

Section 2 of this document provides a description of agricultural resources in the planning area.

4.042 Environmental Impacts

By the year 2010, the General Plan shows that 471 acres of prime agricultural land (field crops) and 295 acres of non-prime agricultural land (grazing lands) will be converted to urban uses. For the prime agricultural land, it amounts to about 26 acres per year. This figure represents less than one tenth of one percent of the land that was farmed in Kings County in 1989. When the urbanization of Hanford, Corcoran and Lemoore is considered, the cumulative loss of agricultural land to Kings County by 2010 could reach one percent, or 6,800 acres, of the 1989 farmland acreage figure.

A secondary effect of removing 26 acres of prime agricultural land per year from production is the land use conflicts that will be caused when development interfaces with agricultural land or when agricultural land becomes substantially surrounded by urban uses. Encroachment of urban uses into an area that is currently being intensively farmed could prevent farmers from carrying out many of their normal management practices (e.g. pesticide application). Farming practices that generate large amounts of dust, high levels of noise, or offensive odors may have to be reduced or curtailed as a result of pressures exerted by adjacent residents or by State chemical application requirements. In addition, farming operations could also experience additional vandalism, theft and nuisance activities from neighboring residents.

Urbanization of agricultural land can also have an economic impact on the local economy because land taken out of production reduces the amount of money that flows into the local economy from agriculture. The report Risks, Challenges and Opportunities: Agriculture, Resources and Growth in a Changing Central Valley, prepared by the American Farmland Trust, indicated that for every one dollar of farm sales four dollars of farm-related economic activity occurs.

4.043 Mitigation Measures and Monitoring

Policies and action programs contained in the Avenal Land Use and Open Space, Conservation and Parks and Recreation Elements will mitigate the project's impact on agricultural land.

The Land Use Element protects prime agricultural lands from development by using State Highway 33, 36th Avenue, Avenal Cutoff Road, and part of Corcoran Avenue as dividing lines between urban and agricultural uses. The Land Use Element also encourages the phasing of urban development by holding some land in "reserve" until adequate urban infill has occurred. Policies and action programs in the Land Use Element are as follows:

1. Enact a Right to Farm Ordinance. This action would protect the rights of farmers who wish to continue to farm but are concerned about pressures from encroaching urban uses.

Mitigation Monitoring - The City Manager at the request of the Avenal City Council

should meet with the Kings County Farm Bureau to discuss the opportunity of that organization sponsoring a Right to Farm Ordinance.

2. Future urban uses should be separated from agricultural uses, where possible, by topographic or man-made features that will buffer the two uses. Examples include roads and freeways, canals and ditches, and certain types of land uses, including golf courses, the waste water treatment plant and parks.

4.044 Residual Impact

Conversion of prime agricultural land to non-agricultural uses must be considered a significant unavoidable impact. The only means of avoiding this impact would be to prohibit the conversion of agricultural land. This option is discussed in the Alternatives to the Proposed Action section of the DEIR.

The adoption of the above mitigation measures will not reduce the project's impact on agricultural resources to an "insignificant" level. Therefore, the General Plan will have an adverse irreversible impact on agricultural resources in the Avenal planning area.

4.05 SCENIC RESOURCES

The scenic qualities of a community are composed of a mixture of natural and man-made features. The value or importance of these features to the public is dependent upon the visual quality of the view. The rating of a view is a subjective process, however, the U.S. Forest Service, with a modification by the Consultant, has devised a rating system for classifying views in the planning area. To identify significant scenic resources and visually blighted areas within the planning area, the Consultant has utilized this rating system to classify views along travel corridors and from sites that contain locally significant views.

The image that natural and man-made features of a community convey to people is important from an intrinsic and economic perspective. The pleasing appearance of a community can encourage residents to maintain and invest in their community. This investment incentive can also apply to out-of-town visitors. Conversely, a community that is not maintained, ill-planned, or poorly designed, can discourage persons from living, moving to or investing in the community. This can have adverse economic implications for a community.

4.051 Existing Conditions

Section 2 of this document provides a description of scenic resources in the planning area.

4.052 Environmental Impacts

Implementation of the General Plan could have a significant adverse impact on the scenic qualities of natural and man-made features in the planning area. As residential, commercial and industrial urbanization occurs, the amount of man-made improvements will begin to dominate what was once open space - agricultural field, grazing land, or open land. Persons who once had a view of an open field, pasture with grazing cows, or orchard, may experience a loss of this resource as growth replaces these open space uses. Specific areas where the Land Use Element proposes significant urbanization of open space are around and north of the Avenal Middle School and east of Highway 33 and south of Hydril Road.

Urbanization can also have an adverse impact on the scenic qualities of the man-made features of the community. An apartment complex that is located in an existing single family neighborhood and improperly designed can degrade the continuity and appearance of the neighborhood. A service commercial or industrial use that is poorly landscaped or designed and located along one of Avenal's entryways can present a poor visual image of the community. Potential examples could include industrial and commercial development along Highway 33, commercial development along Skyline Blvd. and King Street, and commercial and industrial development at the intersection of Interstate 5 and Avenal Cutoff Road.

4.053 Mitigation Measures and Monitoring

The policies and action programs contained in the Land Use and Open Space, Conservation and Parks and Recreation Elements will mitigate the project's impact on scenic resources in the planning area. Both Elements have designated a substantial portion of the planning area as open space. Furthermore, the Land Use Element has designated about 277 acres north of the Avenal High School as a Nature Preserve and 52 acres along Highway 269 as it enters Avenal to Scenic Corridor. Both of those designations will protect and enhance Avenal's natural scenic qualities.

The Land Use Element contains numerous policies and action programs that insure new development will not adversely affect the scenic qualities of Avenal's residential or commercial neighborhoods. In addition, Avenal has already adopted design standards for new commercial development. Together, these documents will encourage development that is aesthetically pleasing and well-maintained. Land Use Element policies and action programs are as follows:

4.054 Residual Impacts

Adoption of the above mitigation measures will reduce the project's impact on scenic resources to an insignificant level.

4.06 CULTURAL RESOURCES

The California Environmental Quality Act (CEQA) of 1970 and subsequent legislation including the Daddah Bill (AB 952) require the identification and evaluation of cultural resources, including prehistoric and historic sites for proposed projects. In this case, the proposed General Plan is general in nature and at this time no specific development plans are proposed. Therefore, this DEIR can not evaluate specific impacts on cultural resources within the planning area. Information regarding cultural resources was provided by the California Archaeological Inventory Southern San Joaquin Valley Information Center at California State University at Bakersfield. The Center indicated that no known archaeological sites existed in the planning area.

4.061 Existing Conditions

Section 2 of this document provides a description of cultural resources in the planning area.

4.062 Environmental Impacts

The proposed General Plan does not allow for the construction of any specific development. However, it does encourage urban development in the planning area that under the current general plan would have remained in large lot rural residential development or agriculture both of which would have less of an impact on cultural resources. Urban development and its attendant improvements, such as streets, infrastructure, building site improvements, and utility lines, can destroy or disturb historic or prehistoric resources. These resources have historic and educational value. For Native Americans, prehistoric resources may have religious and spiritual values.

4.063 Mitigation Measures and Monitoring

Since the proposed General Plan is not intended to allow for the actual construction of any specific development project, the DEIR cannot recommend specific mitigation measures that will reduce the General Plan's impact on archaeological or historic sites. However, some general mitigation measures will be recommended to aid in the environmental review process for future projects that are located in the planning area.

The mitigation of impacts to cultural resources is dependent on the uniqueness of each individual site. The Daddah Bill, AB 952, provides specific criteria in the determination of the "unique" qualities of a site. In order to be considered a "unique" archaeological resource, an artifact, object, or site must meet the following criteria:

1. Contains information needed to answer important scientific research questions and that the public has an interest in that information;

2. Has a special and particular quality such as oldest, best example, largest, or last surviving example of its kind;
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person;
4. Is at least 100 years old and possesses substantial integrity.

Cultural resources which meet one of these criteria, and will be disturbed or destroyed by the proposed project, is considered to be a significant adverse impact. Under the law, any resource not meeting this criteria may simply be recorded and no further consideration is required.

The California Environmental Quality Act (CEQA) requires the protection of any "unique" cultural resource. The best alternative is to seek a way of avoiding any damage to the resource. If this is not feasible, there are alternative methods allowed by law. Preservation of the site is the preferred approach to avoid damage to historic or prehistoric resources, but avoiding damage can be accomplished in a variety of ways, including:

1. Designing the development to circumvent cultural resources;
2. Planning open space or parks to incorporate archaeological sites;
3. Deeding the archaeological site into permanent conservation easements;
4. "Capping" or covering the site with a layer of soil and some type of impervious material before constructing on top of it. The type of construction allowed in this case is limited to parking facilities, tennis courts or some similar facility.

If a site cannot be preserved in place, mitigative excavation is required. Only sections of an archaeological site that are damaged or destroyed by a proposed project need to be excavated. CEQA has placed special rules limiting the mitigation requirements of archaeological resources. Due to the high cost of excavations, the project applicant is limited in the amount of money that is required to be spent on excavation. For instance, the limit on commercial or industrial projects is one-half of one percent of the projected cost of excavation.

4.064 Residual Impacts

Adoption of the above mitigation measures will reduce the project's impact on cultural resources to an "insignificant" level.

4.07 BIOTIC RESOURCES

Biotic resources are considered to be a renewable natural resource. Consumption of this resource is considered to be an irreversible environmental impact. Should certain species of plant or animals become extinct or have their numbers so reduced that they can not effectively increase their populations, the resource then becomes a nonrenewable resource.

4.071 Existing Conditions

Section 2 of this document provides a description of biotic resources in the planning area. In addition, the Consultant in association with Hansen's Biological Consulting, has performed a biological assessment of natural habitat areas adjacent to the urbanized portions of the planning area. Furthermore, this assessment also surveyed the literature and completed a preliminary field assessment to determine if sensitive plant or animal species existed. The results of this survey are contained in Appendix B of this document.

4.072 Environmental Impacts

The General Plan will encourage low density residential development and a golf course on about 215 acres of non-native grassland. This plant community supports a wide range of native plant and animal species (see Appendix B). In addition, development could introduce various human activities, including operation of off-road vehicles, hunting and introduction of dogs and cats, onto additional lands adjacent to the aforementioned 215 acres. Changes in land use and increased levels of human activity caused by the project can impact the biotic environment by:

1. Eliminating native habitat can impact natural communities and individual species that occupy those communities, including the Blunt-Nosed Leopard Lizard, San Joaquin Kit Fox, San Joaquin Antelope Squirrel, and the San Joaquin Woolly Threads.
2. Restricting the roosting, nesting or hunting habitat of certain species of raptors.
3. Introducing non-native species of plants and animals to the project area, including feral cats and dogs in the natural communities.
4. Introducing additional traffic near native lands could increase "road kills" of leopard lizard, kit fox and antelope squirrel populations.
5. Introducing human activities, like hunting which can lead to a reduction in local rodent or raptor populations.

4.073 Mitigation Measures and Monitoring

To best mitigate the above biotic impacts, the alternative land use plan proposes to

avoid developing portions of the native habitat. This measure is discussed in the Alternatives to the Proposed Action section of the DEIR.

The policies and action programs contained in the Land Use and Open Space, Conservation and Parks and Recreation Elements will mitigate the project's impact on biotic resources in the planning area. Both Elements propose that 277 acres of native land be set aside as a Nature Preserve and 52 acres as a Scenic Corridor. These designations would help mitigate the loss of native lands to development on other lands in the planning area. In addition, about 7900 acres are designated as either Intensive or Extensive Agriculture. These designations will help preserve biotic resources in the region.

4.074 Residual Impacts

Adoption of the alternative land use plan discussed in the Alternatives to the Proposed Action section of the DEIR would reduce the project's impact on biotic resources to an insignificant level.

Adoption of the General Plan with its policies and action programs will mitigate the project's impact on biotic resources but not to a level of insignificance.

PHYSICAL IMPACTS

Physical impacts involves environmental impacts that adversely affect the physical environment, such as ground and surface waters, and air.

4.08 WATER QUALITY

Urban development and its related activities, including road building, grading, and infrastructure installation, can increase the amount of soil sediment, heavy metals, plant nutrients (nitrates and phosphates), and organic chemicals (oil, detergents, pesticides) that enters surface waters. These materials generally enter these waters during periods of precipitation when urban storm waters are diverted to waterways via storm water drainage lines.

SURFACE WATERS

4.081 Surface Waters - Existing Conditions

Section 2 provides a description of water quality conditions in the planning area.

4.082 Surface Waters - Environmental Impacts

The quality of surface waters is not a significant environmental issue because year-round water courses do not exist in the planning area. In addition, urban storm water runoff is diverted onto surrounding agricultural lands rather than into water channels. Any contaminants contained in this runoff is eventually bound-up in the soil profile. The likelihood on any of this contamination entering Avenal's ground water aquifer is remote because the depth to water is several hundred feet.

Intermittent watercourses exist in the planning area, however, they only flow during periods of intense precipitation. Some urban runoff enters these channels, however, this runoff also flows out onto agricultural lands.

4.083 Surface Waters - Mitigation Measures and Monitoring

To avoid urban runoff from entering intermittent watercourses, development within the planning area should channel its storm waters to retention ponds. These ponds will retain the runoff, which eventually percolates into the ground and/or evaporates into the air. This retention allows the contaminates contained in the runoff to percolate into the ground. In most cases, these chemicals will bind to soil particles at the bottom of the pond thus preventing them from entering a surface water system or contaminating agricultural soils surrounding Avenal. These retention basins can also serve as parks or recreational playing fields.

4.084 Surface Waters - Residual Impact

The General Plan will not a significant impact on the water quality of surface waters in the planning area. As an added measure of protection, the Open Space, Conservation, Parks and Recreation Element recommends that future parks be designed to retain storm waters in addition to providing recreational opportunities.

GROUND WATER

4.085 Ground Water - Existing Conditions

Section 2 provides a description of ground water quality conditions in the planning area.

4.086 Ground Water - Environmental Impacts

The potential of urban development to contaminate the ground water system under the urbanized portions of Avenal is remote. Depth to groundwater averages 240 feet and two wells in Avenal are presently drawing water from over 350 feet. Water that is contaminated, due to mixing with urban runoff, landfill material or oil from drilling sites, will combine with soil particles as it percolates downward. The ability of various soil particles and organic matter to "bind" with contaminants cleanses the water as it moves toward the underlying aquifer. Because the distance to the aquifer is several hundred feet, the possibility of the contaminated water reaching the aquifer is slight.

Urban development near the intersection of Interstate 5 and the Avenal Cutoff could also contaminate the aquifer that underlies the San Joaquin Valley. It is unlikely, however, because of the depths to groundwater on the west side of the Valley are generally several hundred feet.

4.087 Ground Water - Mitigation Measures

New development near the intersection of the Avenal Cutoff Road and Interstate 5 shall be required to provide on-site detention ponds to collect storm water runoff. Also, since development on this side of the Kettleman Hills will require the use of septic tank leach line systems, the following measure will mitigate the potential for ground water contamination resulting from septic tank systems.

1. All subsurface waste water disposal systems shall be designed to meet the requirements of the Kings County Health Department, and if applicable, the State Regional Water Quality Control Board. Such systems shall be approved by the City Engineer.

Mitigation monitoring - The Engineering Department shall insure that developments that utilize septic tank leach line systems are adequately reviewed by the Kings County Health Department.

2. All on-site detention ponds associated with industrial development shall be designed consistent with the Regional Water Quality Control Board's guidelines for these types of facilities.

Mitigation monitoring - The Public Works Department shall insure that the design of the detention ponds are consistent with the standards of Regional Water Quality Control Board.

4.087 Ground Water - Residual Impact

With the implementation of the above mitigation measures, the project will not have a significant impact on the quality of planning area's ground water system.

4.09 AIR QUALITY

A decline in the Valley's air quality adversely affects the public's health, especially senior citizens and young children, it reduces agricultural productivity of crops like cotton, alfalfa, citrus and broad-leafed plants and it obstructs the views of the Sierra Nevada and coastal range.

4.091 Existing Conditions

Section No. 2 provides a description of the current air quality environment in the planning area and the San Joaquin Valley.

4.092 Environmental Impacts

Over the 18-year planning period, implementation of the General Plan will increase the population in the planning area by an estimated 4022 persons. This population growth will increase air emissions emanating from the planning area, which will cause an adverse impact on local air quality. Air emissions may actually exceed the amount associated with an additional 4022 persons living in the City. This situation could occur if:

1. More persons live on the fringe of the City.
2. More prison employees choosing to shop in town.
3. Additional industrialization brings more employees to the City from surrounding communities.

4. Additional persons travel to Avenal for recreation purposes, such as golf or horse-back riding, or stop over for food, gas or rest, as would be the case if highway commercial uses are constructed along Interstate 5.

The Consultant using the State's air emissions model, URBEMUS (see Appendix D), has calculated in Table No. 2 the vehicle-related emissions resulting from the planning area in 1992.

Table No. 2
Air Emissions, Planning Area-1992

<u>Land Use</u>	<u>ROG</u>	<u>CO</u>	<u>NO_x</u>	<u>PM₁₀</u>	<u>SO_x</u>
single family units	110 lbs/dy	1056	89	6	6
apartments	30	290	24	2	2
commercial	49	474	36	31	2
schools	35	308	32	32	2
parks	0	4	1	0	0
industrial	<u>1</u>	<u>7</u>	<u>1</u>	<u>0</u>	<u>0</u>
subtotal	225	214	3018	71	12 lbs/dy
factor	<u>x .65</u>	<u>x .65</u>	<u>x .65</u>	<u>x .65</u>	<u>x .65</u>
total	146	139	1960	46	8 lbs/dy

Notes: ROG = reactive organic gases, CO = carbon monoxide, NO_x = nitrogen oxides, PM₁₀ = particulate matter, and SO_x = sulfur oxides; .65 factor = discounts counting trips twice

Source: Collins & Associates, 1992

The project will also have a cumulative impact on Valley air quality as Avenal's growth is factored in with urbanization in other parts of the Valley. Table No. 3 indicates that over the planning period, TOGs and CO will decrease even though population is increasing and NO_x, PM₁₀, and SO_x will increase, ranging from 30 to 50 percent. The later pollutants will add to the Valley's already poor air quality.

Table No. 3
 Air Emissions, Planning Area-2010

<u>Land Use</u>	<u>ROG</u>	<u>CO</u>	<u>NO_x</u>	<u>PM₁₀</u>	<u>SO_x</u>
single family units	103 lbs/dy	1446	144	10	12
apartments	25	358	36	2	3
commercial	59	843	82	92	7
schools	21	274	34	46	3
parks	1	16	2	1	0
industrial	<u>60</u>	<u>246</u>	<u>24</u>	<u>27</u>	<u>2</u>
subtotal	269	3183	322	178	27 lbs/dy
factor	<u>x .65</u>	<u>x .65</u>	<u>x .65</u>	<u>x .65</u>	<u>x .65</u>
total	175	2069	209	116	18 lbs/dy

Notes: ROG = reactive organic gases, CO = carbon monoxide, NO_x = nitrogen oxides, PM₁₀ = particulate matter, and SO_x = sulfur oxides; .65 factor = discounts counting trips twice

Source: Collins & Associates, 1992

This air quality impact can become more pronounced if urban growth causes congestion on roadways in the planning area. Congestion causes greater air quality problems than traffic that is flowing smoothly. The Circulation Element contains numerous policies and action programs that will promote free flowing traffic, which reduces vehicular air emissions.

Short-term air quality impacts will involve dust that is generated by construction activities. This impact can cause nuisance problems for adjacent residents and farming operations that require their crops to remain free of dust.

4.093 Mitigation Measures and Monitoring

Mitigation of the long-term air quality impacts can not be resolved by any one city or county. It must be accomplished on a regional basis, however, each city must implement policies and action programs that will reduce air emissions on a city-wide basis.

The most effective approach to avoiding air quality impacts resulting from the General Plan is to preclude development from occurring on the edges of the City

Mitigation measures that will reduce both short-term and long-term air quality impacts are as follows:

1. Roadways that will experience LOS rating of C, D, or F with the buildout of the planning area should be widened, resurfaced, provided with signalization and or left-turn lanes so that these rating are improved to A or B.
2. The City should extend roadways into portions of the planning area that do not have suitable circulation access. Examples include the extension of Hydril Road, E Street and Corcoran Avenue. This will minimize the potential for circuitous trips that require greater mileage, more stops and slower speeds all of which generate additional air emissions.
4. Bike paths should be established along waterways and appropriate streets.

Mitigation monitoring - The Public Works Director shall oversee the implementation of the above mitigation measures. These measures would be implemented gradually over the life of the plan.

Short-term mitigation measures for air emissions resulting from development are as follows:

1. All material excavated or graded should be sufficiently watered to prevent excessive amount of dust. Watering should occur at least twice a day with complete coverage, preferably in the later morning and after work is done for the day.
2. All clearing, grading earth moving or excavation activities shall cease during periods of high winds greater than 20 mph averaged over one hour.
3. All inactive portions of a construction site should be seeded and watered until grass growth is evident.

Mitigation monitoring - The Public Works Director shall insure that the above mitigation measures are implemented during construction within the planning area.

4.094 Residual Impact

Approval of the the previously listed mitigation measures will reduce the impact of construction projects on short-term air quality to an "insignificant" level.

The adoption of the Land Use and Circulation Elements will implement policies and action plans that will minimize the General Plan's impact on air quality; however, not to an insignificant level. The General Plan will have a significant, adverse impact on the air quality of the San Joaquin Valley.

HUMAN ENVIRONMENT

Impacts in this section of the draft environmental impact report describe the General Plan's potential impact on the human environment, such as services, infrastructure, and land use.

4.10 SCHOOLS

4.101 Existing Conditions

Section No. 2 of this document describes the existing conditions in the Reef-Sunset School District.

During the 1990/91 school year, the School District had 1798 students enrolled. Approximately 51 percent of these students were enrolled in grades K-6, 19 percent in grades 7-8, and 30 percent in grades 9-12.

4.102 Environmental Impact

The projected student enrollment for the School District for the year 2010 is derived using two methods - ratio correlation and annual percentage.

Using the ratio correlation method, the student enrollment for 2010 is projected to be 3044 students (see calculations below). Applying the grade percentages mentioned above to the projected 2010 enrollment, the K-6 enrollment is estimated to be 1552 students; grades 7-8 enrollment, 578 students; and high school, 913 students.

Student Enrollment Projection (2010)

$\frac{1752 \text{ students (1990 student population)}}{5455 \text{ people (1990 city population)}}$	$\frac{3044 \text{ students (2010 student population)}}{9477 \text{ people (2010 city population)}}$
--	--

Since the 1982/83 school year, the School district has been growing at an average annual growth rate of 3.2 percent. Using this growth rate, the District will grow to 3271 students by the year 2010. Applying the grade percentages mentioned above to this projected enrollment, the K-6 enrollment is estimated to be 1668 students; grades 7-8, 621 students; and high school, 818 students.

The above projections indicate that the Sunset-Reef School District is going to be significantly impacted by future growth. Using the higher projected enrollment figure of 3271 students, the School District would be required to construct at least one new elementary school. Factors that could postpone the construction of a new

elementary school could include implementation of year-round school, an increase in student/teacher ratios, or increasing the number of classrooms on the campus beyond its holding capacity.

The high projection for the middle school, 621 students, and the high school, 818 students, are within "acceptable" enrollment sizes for these types of schools in the Kings-Tulare County area. However, the School District should assess whether or not the support facilities on these campuses, such as cafeterias, restrooms, libraries, and athletic fields, can service these higher enrollments.

Given the fiscal situation at the State level and the difficulty of local school districts to pass bond measures for school construction, the General Plan's projected growth will have a significant adverse impact on the School District.

The Sunset-Reef District has mitigated some of the fiscal impacts associated with increasing enrollments with the passage of a school bond measure in 1990 and approving an increase in school impact fees, from \$.63 to \$1.58 per square, in 1992.

4.103 Mitigation Measures and Monitoring

The General Plan will have a significant adverse impact on the Sunset-Reef School District. The only means of avoiding this impact would be to prohibit future development in the planning area. This option is discussed in the Alternatives to the Proposed Action section of the DEIR.

The Land Use and Open Space, Conservation, Parks and Recreation Elements propose a new elementary school site on land east of Seventh Avenue and south of Kern Street. Unfortunately, the designation of this school site by these two elements will not mitigate the impact on the School District of having to fund the purchase of a site and finance the construction and operation of the school.

Measures which could mitigate increases in student enrollment within the District are as follows:

1. A mitigation measure that would eliminate the General Plan's impact on the School District would be for the District to pass another bond measure when the construction of the elementary school is required.

Mitigation Monitoring - The Sunset-Reef School District Board would be required to place this bond measure on the ballot prior to their need for school construction funds for the elementary school.

2. The elementary school district should initiate and implement year-round school.

Mitigation Monitoring - The School District Board would be required to initiate this

policy.

3. The School District should increase the teacher/student ratio for grades K-8.

Mitigation Monitoring - The Sunset-Reef School District Board would be required to initiate this policy.

4.104 Residual Impact

Implementation of the above mitigation measures will reduce the General Plan's impact on schools to an insignificant level except, if the first mitigation measure, passage of a school bond measure, fails to materialize. If the school bond measure is not passed by the voters, the project will have a significant adverse impact on the school system.

4.11 SOLID WASTE COLLECTION

Assembly Bill 939 requires cities to reduce their solid waste volumes by 25 percent by 1995 and 50 percent by the year 2000. To achieve this reduction in volume, AB 939 requires local entities to devise a materials recovery facility by composting organic materials; recycling paper, metal, glass, and plastic; and by diverting household hazardous waste to the Kettleman Hills waste facility.

4.111 Existing Conditions

Section No. 2 of this document describes the existing service conditions for solid waste collection and disposal in Avenal.

4.112 Environmental Impact

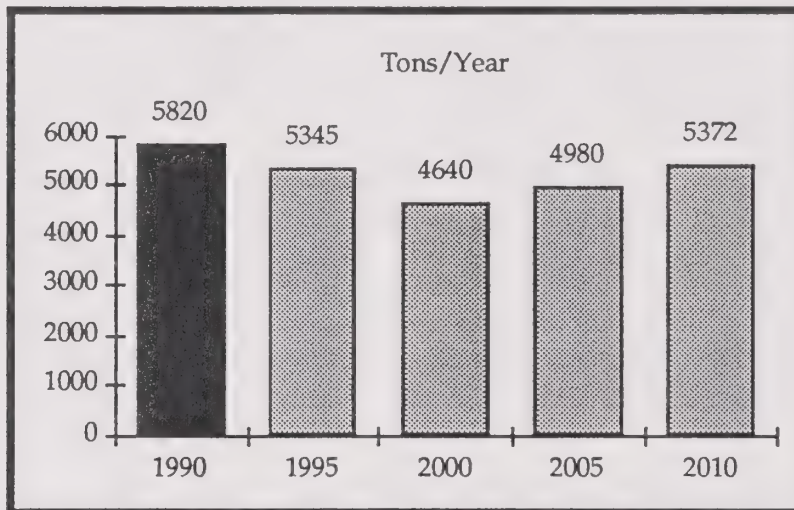
Future solid waste volumes caused by Avenal's growth will have the impact of causing the landfill site to reach capacity within 12 years, under existing solid waste management operations. However, under AB 939, the City should be successful in extending the life-expectancy of the landfill site through recycling, reuse and diverting hazardous materials to the Chem. Waste Facility at Kettleman Hills.

Currently, Avenal is generating about 5820 tons per year of solid waste, approximately 1280 pounds per year per person for Avenal residents and 1000 pounds per year per person for the prison population. Assuming AB 939 is effectively implemented by the City, that Avenal's population will increase at 2.8 percent annually, and that the waste generated by the prison will remain constant, the amount of solid waste that will be disposed of at the landfill within the planning period is projected in Figure No. 2.

Based on the projected landfill figures contained in Figure No. 2, the General Plan

will not have a significant impact on the environment as it relates to the capacity of the landfill. As population increases, the City will be required to hire more personnel and purchase additional equipment to operate the landfill, however, the cost of these increased service requirements will be borne by increased monthly payments from residents.

Figure No. 2
Project Solid Waste Volumes



Note: AB 939 requires a 25 percent reduction in solid wastes volumes by 1995 and a 50 percent reduction by 2000.

Source: Avenal Public Works Department, 1992

4.113 Mitigation Measures and Monitoring

The General Plan will not have a significant impact on the environment, assuming the City of Avenal effectively implements AB 939.

Mitigation Monitoring - The Public Works Department will be responsible for insuring that solid waste generated from the Avenal planning area is disposed of in an environmentally safe manner and is diverted from the landfill by using recycling, reuse and alternative disposal methods.

4.114 Residual Impact

The project will not have a significant impact on the environment.

4.12 FIRE PROTECTION

4.121 Existing Conditions

Section No. 2 of this document describes the existing service conditions for fire protection in Avenal.

4.122 Environmental Impacts

Development in the planning area will increase the demand for additional fire services in Avenal. This could require the County, who provides fire protection in Avenal, to hire more firemen and purchase additional equipment. The City, who provides a volunteer force, would also need to augment their ranks.

The need for more sophisticated fire protection services comes with certain types of development - large apartment complexes, industrial uses, and residential development in the foothills. Enhanced fire services can include training for multi-story fires, hazardous waste handling, and medical training. These potential increases in fire services can have a fiscal impact directly on Kings County and indirectly on the City of Avenal. However, these increases will occur gradually and the general funds of these two entities should be able to adequately absorb these costs over time.

The urbanized portion of Avenal, including the Prison, is within the 3-minute response time of the Avenal fire station. In addition, secondary fire protection coverage is provided by the fire station at the Prison. Future growth in or adjacent to the developed portion of Avenal will be at a minimum, inside the Avenal station's 3-minute response time, and at a maximum, inside its 5-minute response time.

The Land Use Element proposes that commercial and industrial development be located at the intersection of Interstate 5 and the Avenal Cutoff Road. This portion of the planning area is outside the 5-minute response area of the Avenal fire station. It has a response time that ranges from 8 to 15 minutes. Within this time period, a substantial amount of property damage could occur prior to the arrival of fire personnel.

4.123 Mitigation Measures and Monitoring

The project will not have a significant impact on future land uses that are constructed in or near the urbanized portion of Avenal. Public safety could be adversely affected, however, if new commercial and industrial uses are constructed at the intersection of Interstate 5 and the Avenal Cutoff Road.

Adoption of the Safety Element provides action programs that will mitigate this

potential public safety problem. The Element proposes that these uses be sprinklered and provide on-site storage of water for fire suppression purposes.

4.124 Residual Impact

Implementation of the Safety Element will reduce the problem of fire safety to an insignificant level.

4.13 LAW ENFORCEMENT

4.131 Existing Conditions

Section No. 2 of this document describes the existing service conditions for fire protection in Avenal.

4.132 Environmental Impacts

Development over the planning period will require Kings County to hire additional Sheriff personal and purchase more equipment. The population growth associated with this development will have a fiscal impact on the County's future general fund; however, the increased costs should occur gradually and additional general fund revenue should be able to keep pace with these increased policing costs.

4.133 Mitigation Measures and monitoring

The project will not have a significant impact on policing services. Mitigation measures or monitoring programs are not required for impacts that are insignificant.

4.134 Residual Impact

Insignificant.

4.14 LAND USE CONFLICTS

Land use conflicts are created when one land use causes occupants of another land use to be exposed to hazards or inconveniences, such as dust, pollutants, noise, safety hazards, traffic congestion, and visual blight. Some land uses are not as sensitive to the aforementioned conditions as others. Uses which are very sensitive to the above conditions include residential dwelling units, schools, hospitals, and parks.

The most common example of a land use conflict is where an industrial use generates noise and pollution that disrupts occupants in an adjacent residential development. These residents will often complain to city officials, the county health department or the industry itself. If residents do not receive satisfaction from these complaints, the residents can bring a civil suit. The courts then attempt to resolve these conflicts between the two uses. A more proactive approach is to insure these conflicts are not created in the first place. This solution can be facilitated through a city's land use element and zoning ordinance.

4.141 Existing Conditions

The Land Use Element, contained in Section 1 of this document, provides information on land use conditions in the planning area, such as land use distribution, residential densities, building intensities, and proposed land use acreages. Section 2 of this document also furnishes information on land use conditions in the planning area.

The Land Use Element proposes a number of policies and action programs that could reduce land use conflicts. For example, the Land Use Element precludes sensitive land uses - residential dwellings and schools - from abutting land uses that could potentially pose a conflict. Examples of these types of land uses are the landfill, airport, and waste water treatment plant.

In addition, the Element provides performance standards to which all land uses and operation of these land uses must conform to. These standards are as follows:

- glare and heat: Any operation producing intense glare or heat should be conducted within an enclosed building or with other effective screening in such a manner as to make such glare or heat completely imperceptible from any point along the property line.
- vibrations: Uses or operations should cause no inherent and recurring generated vibration perceptible along the property line, except for transportation operations and temporary construction.
- light: Exterior lighting, except for overhead street lighting and warning, emergency or traffic signals, should be installed in such a manner that the light source is sufficiently obscured to prevent glare or public streets and walkways or into any adjoining properties.
- smoke: Smoke emitted into the atmosphere from any air contamination source or emission whatsoever should be of such a shade or density as not to obscure an observer's vision to a degree in excess of twenty percent.

4.142 Environmental Impacts

Agricultural Land Use Conflicts

Urban development that is adjacent to intensive agricultural operations creates potential land use conflicts. For the farmer, certain operations may have to be stopped or curtailed due to regulations or complaints from the adjoining neighbors. Complaints can involve dust, noise and odor; regulatory restrictions can involve application of pesticides or other types of chemicals.

Complaints are not just restricted to residents that live next to a farming operation. The farmer can also lodge complaints, such as vandalism and trespassing, against neighboring residents.

To avoid this type of land use conflict, the Land Use Element encouraged urban development to in-fill prior to consuming surrounding agricultural lands. Further, where future urban development does interface with intensive agricultural operations, the Land Use Element has attempted to maintain a buffer between the two opposing land uses, like a road or non-sensitive land use.

Industrial Land Use Conflicts

The Land Use Element identifies two areas for industrial development, east of State Highway 33 and north of the Prison, and south of the Avenal Cutoff Road and east of Interstate 5.

Where existing or proposed industrial uses are in close proximity to lands designated for residential uses or other sensitive land uses, certain land use conflicts can arise. These conflicts can include competition for on-street parking, noise, odor and excessive truck traffic.

To avoid this type of land use conflict, the Land Use Element precludes sensitive land uses from locating adjacent to future industrial uses. Sometimes, however, industrial uses can adversely affect large geographic areas, such as in the case of odors, noise or industry-bound truck traffic. To minimize these types of impacts, the Land Use Element contains performance standards to which each new industry will have to conform in order to avoid impacting surrounding land uses.

Multi-Family Residential Land Use Conflicts

Lands that contain or are proposed for multi-family residential uses (medium to high density residential designations) can potentially pose conflicts for adjacent single family residential uses. These conflicts generally involve competition for on-street parking, visual blight due to poor maintenance or management, and excessive noise. Where there is no physical or spatial separation between these two types of residential uses, the conflicts can become more pronounced.

Medium and high density residential designations, which allow for apartments, are often applied to vacant lands in existing established residential neighborhoods. Apartments can disrupt the architectural or visual continuity of an older neighborhood. Should this intrusion occur often enough, the integrity and appearance of the neighborhood can deteriorate.

The Land Use Element precludes this type of incompatible land use intrusion. High density residential designations have been applied to lands that are in newly developing areas. Typically, the designations do not exceed five acres in size and are located at intersections where at least one of the roadways is a collector. By applying this designation to corners in newly developing areas, single family development that will be abut apartments can be designed to avoid the aforementioned conflicts.

Commercial Land Use Conflicts

Lands that contain or are proposed for commercial uses can adversely impact residential uses and other sensitive land uses by creating excessive traffic congestion in the immediate area, as in the case of community commercial uses; visual blight and excessive noise with service and highway commercial uses; and off-site illumination with neighborhood commercial uses. These impacts can disrupt residential neighborhoods by increasing traffic congestion and creating traffic safety problems, cause loss of sleep or concentration when noise or light is excessive, and reduce property values if adjacent commercial operations are significant enough to reduce the livability of a neighborhood.

4.143 Mitigation Measures and Monitoring

Agricultural Land Use Conflicts

The Land Use and the Open Space, Conservation, Parks and Recreation elements discourage leap-frog development and encourage urban in-fill prior to developing agricultural lands on the fringe of the community. In addition, where intensive agriculture and planned urban development interface, the Land Use Element buffers the two uses with a roadway.

Industrial Land Use Conflicts

The Land Use Element has located Avenal's two industrial areas in locations that avoid causing impacts on adjacent land uses. Avenal's primary industrial area is located on the east side of State Highway 33 and south of a new collector roadway, which will connect Seventh Avenue with 36th Avenue. This area is downwind from the developed portion of Avenal, thereby avoiding potential air pollution and odor problems. Furthermore, it is uphill from the wastewater treatment plant, which makes it easy to serve in terms of waste water collection, and it is located along a State highway, providing easy access for trucks and automobiles.

The second industrial area is located near the intersection of Interstate 5 and the Avenal Cutoff Road. The area includes the P.G.& E. gas plant and adjoining land to the north. The Land Use Element proposes that this area be surrounded by land designated for agricultural uses. This will insure that potential land use conflicts between new industrial uses and other types of urban uses are avoided. Being adjacent to Interstate 5, truck traffic generated by future industrial uses will not have to impact residents of Avenal.

Through the Land Use Element's performance standards, many of the impacts associated with industrial uses, like vibrations, smoke, light and glare, will be mitigated or eliminated. Significant noise levels generated by industrial uses will also be required to comply with noise standards contained in the Noise Element's, model noise ordinance.

Mitigation Monitoring - To insure that the Land Use Element's development and performance standards are effectively implemented, the Planning Department shall be required to amend the revised Zoning Ordinance to incorporate these standards into the text. These standards can be a separate chapter in the Zoning Ordinance or they can be added to each zone district. This ordinance amendment should be scheduled for a public hearing once the General Plan is adopted.

The Planning Department shall also prepare a Noise Ordinance. A model noise ordinance is contained in the Noise Element. This ordinance should be scheduled for a public hearing once the General Plan is adopted.

Multi-Family Residential Land Use Conflicts

Through the Land Use Element's development and performance standards, many of the impacts associated with multi-family residential uses, like visual blight and off-site parking congestion will be mitigated or eliminated. Significant noise levels generated by multi-family uses will be required to comply with the model noise ordinance contained in the Noise Element. Furthermore, new multi-family residential development will be required to undergo Avenal's site plan review process.

As an added mitigation measure to insure that multi-family development does not adversely impact the neighborhoods in which they are located, the Zoning Ordinance should be amended to add design criteria for multi-family development. Examples of design criteria include:

1. The monotony of straight building lines should be remedied by varying setbacks, building height, and dense plantings of trees.
2. Multi-family development should be designed so as to discourage on-street parking by residents or visitors of the apartment complex.

3. Buildings should be setback so as to avoid second story windows looking onto adjacent properties.
4. Trash enclosures should be located so as to be convenient for pickup and they shall be enclosed with a solid block wall that is landscaped on the exterior.
5. The landscaping treatment for setback areas adjacent to public streets should be composed of at least 75 percent turf with a combination of 15-gallon and 24-inch box trees. Mounding should be kept to a minimum and the turf should be of the bermuda variety. These standards will reduce watering needs. Shrubs should be drought tolerant.
6. The applicant shall enter into a landscaping maintenance agreement as a condition of the site plan review process.
7. Fifty percent of the required parking should be covered.

Mitigation Monitoring - To insure that the Land Use Element's development and performance standards are effectively implemented, the Planning Department should be required to amend the revised Zoning Ordinance to incorporate these development standards into the text. These standards can be a separate chapter in the Zoning Ordinance or they can be added to each zone district.

The Planning Department should also prepare a Noise Ordinance. A model noise ordinance is contained in the Noise Element. This ordinance should be scheduled for a public hearing once the General Plan is adopted.

Commercial Land Use Conflicts

The Land Use Element proposes to maintain Skyline Blvd. and Kings Street has the primary commercial districts in the community. Sufficient distance separation between these commercial districts and sensitive land uses will insure that long-term land use conflicts are avoided. Presently, commercially and residentially designated lands are separated by roadways or alleys.

Through the Land Use Element's development and performance standards, many of the impacts associated with commercial uses, like traffic safety, parking congestion and off-site illumination, would be mitigated by these standards. Significant noise levels generated by commercial uses will be required to comply with noise standards contained in the General Plan's Noise Element's model noise ordinance.

Mitigation Monitoring - To insure that the Land Use and Noise Element's development and performance standards are effectively implemented, the City should consider amending the Zoning Ordinance to incorporate these development

standards into the text. These standards can be a separate chapter in the Zoning Ordinance or they can be added to each zone district.

The City should also prepare and adopt a Noise Ordinance. A model noise ordinance is contained in the Noise Element.

4.144 Residual Impact

Adoption and the implementation of development and performance standards identified in the Land Use Element and adoption of the model noise ordinance contained in the Noise Element will reduce industrial, commercial and multi-family land use conflicts to an "insignificant" level. Agricultural land use conflicts can not be reduced to an insignificant level.

4.15 CIRCULATION

4.151 Existing Conditions

Avenal's existing circulation system is described in Section No. 2 of this document.

4.152 Environmental Impacts

The traffic volumes in the Planning Area are expected to increase as a result of the development of the proposed land uses. Although the projected increases are significant in some cases, it appears that the Avenal circulation system, with limited improvements, generally has sufficient capacity to provide an acceptable level of service in the year 2010.

A level-of-service (LOS) of "C" was established as the standard for evaluating the impact of the project. If the components of the City's street network operated at LOS "C" or better with the projected 2010 "with project" traffic volumes, the impacts of the project would not be considered significant. If the "with project" traffic dropped the level-of-service below "C", the impacts would be considered significant and mitigation measures would be required to raise the LOS to "C" or better.

Trip Generation

For the purpose of quantifying the number of trips that will be generated by the proposed land uses, it was assumed that there currently is, and will continue to be, a strong correlation between the total number of trips generated in Avenal and the number of residences in the community.

Based on a 1991 population of 5,810 people and an average of 3.1 persons per residential unit, there currently are approximately 1,874 residential units in Avenal. It was assumed that 70 percent of the total units, or 1,312 units, will be single-family units, while 30 percent, or 502 units, will be multi-family units.

Trip generation data published in Trip Generation, (ITE, 1987) indicates that single-family residential units generate an average of 10 trips per unit per day and multi-family units (that are typical of Avenal) generate an average of 7.5 trips per unit per day. Using these rates, the existing land uses generate an estimated 17,337 daily trips in Avenal.

The residential land demand analysis described in the Land Use Element indicates that there will be a need for 921 new single-family units and 376 new multi-family units during the life of the project. Using the trips generation rates described above, the new units will generate an additional 12,030 trips.

Therefore, when the proposed land uses, and the residential uses in particular, are developed, a total of 29,367 trips will be generated in Avenal. This represents an

increase of approximately 70 percent in the number of trips in Avenal over the planning period.

Trip Assignment

The 2010 "with-project" trips were manually assigned to the proposed City street network based on a projection of existing traffic volumes, trip generation rates of the proposed land uses, and anticipated future circulation patterns. In the interior portion of the community, many of the trips were assigned by increasing existing traffic volumes by a factor of 1.7.

Trips were assigned to the proposed collector roads based on the trip generation rates of the future and existing land uses that would likely be served by the new facilities. In some cases, trips generated by the future land uses were added to the existing traffic volumes. Some trips (that were assumed to be mostly through trips) were shifted from existing streets to the proposed streets when it appeared that the new facilities could better serve through traffic.

The projected 2010 "with-project" traffic volumes for the major components of the Avenal street network are shown in Exhibit No. 4. It is expected that all of the City streets, which does not include the two State highways, will carry less than 5,400 daily trips, which is the maximum volume that the City collector streets can carry and operate at level-of-service "A". Therefore, it appears that the City streets will continue to have "free flowing" operating conditions when the proposed land uses are fully developed if the proposed collector roads are constructed. Refer to Table No. 4 for projected 2010 "with project" traffic volumes and the level-of-service assignments for the major components of Avenal's street network.

The busiest City street is expected to be San Joaquin Street, which will carry an estimated 4,500 daily trips near Highway 269. On the west side of the community, it will carry an estimated 2,900 daily trips. Most of the other collectors are expected to have traffic volumes of 2,000 to 3,600 daily trips.

Without the proposed collector streets, the traffic volumes would be significantly higher on some of the existing City streets, particularly Seventh Avenue and San Joaquin Street. Seventh Avenue currently is used by through traffic as a "short-cut" between Highway 269 and Highway 33. The proposed designation of Corcoran Avenue and 36th Avenue as collectors, and the construction of an east-west collector between 36th Avenue and Seventh Avenue will provide alternative connections between Highway 269 and Highway 33 and the farm lands south of Avenal. These alternative connections are expected to reduce the volume of through traffic on Seventh Avenue, especially north of the proposed east-west collector street.

The proposed extension of Hydril Road along the base of the foothills to the west of Highway 269 is expected to provide direct access to the proposed land uses in the northern portion of the community. This future collector road will also provide access to the Avenal Hospital and the recently constructed middle school. It is

expected that the extension of Hydril will result in a shift of traffic from San Joaquin Street to Hydril, particularly at the west end of San Joaquin.

Table No. 3
Projected 2010 "with-project" Traffic Volumes

Projected Conditions on City Streets

Street	Lanes	Type	Daily Volume	Capacity	V/C	LOS
San Joaquin						
E/O S.H. 33	2	Collector	2900	9,000	.32	A
E/O Fifth	2	C	4000	9,000	.44	A
W/O S.H. 269	2	C	4500	9,000	.50	A
Kings						
E/O Third	2	C	4000	9,000	.44	A
First						
N/O San Mateo	2	C	3600	9,000	.40	A
Fifth						
N/O San Mateo	2	C	3000	9000	.33	A
Seventh						
S/O S.H. 269	2	C	2600	9,000	.29	A
N/O S.H. 33	2	C	2700	9,000	.30	A
E Avenue						
S/O San Joaquin	2	C	3000	9000	.33	A
Corcoran						
S/O Kern	2	C	1600	9000	.18	A
Hydril Road						
E/O SH 269	2	C	1500	9000	.17	A
W/O SH 269	2	C	2800	9000	.31	A

State Highways 33 and 269

Segment	Lanes	Peak Hour ¹	Volume Daily	LOS
S.H. 269				
@ Seventh Ave.	2	700	7000	C ²
S.H. 33				
@ SH 269	2	450	4500	B ³

¹ Estimated to be 10 percent of Daily Volume

² Based on HCM methodology for evaluating two-lane highways with peak hour volumes

³ Based on HCM system planning evaluation

In the downtown commercial area, Kings Street was assigned a traffic volume of 4,000 daily trips west of Highway 269. Although this projected volume seems high relative to the projected volumes elsewhere in the community, the existing traffic volume, which was adapted from a count collected by the City, also was relatively high.

State Highways

The two State highways that run through the urban portion of Avenal will experience an increase in traffic in response to both future regional growth and local development. The regional growth will result in additional through traffic on the highways while local development will tend to increase the volume of local trips using the highways.

Highway 33

Based on the 1990 traffic volumes published by Caltrans, Highway 33 currently has an Average Annual Daily Traffic (AADT) volume of approximately 1,650 daily trips near 36th Avenue, which is south of the State Prison, and an AADT of approximately 1,550 trips at the western City limits. It is assumed that 1,600 daily trips represents a "base" volume of traffic on 33 that does not include most of the trips generated by the State Prison or all of the local trips using the highway between San Joaquin and 7th Avenue. The "base" flow on Highway 33 includes through trips and trips between Avenal and outlying areas. It is expected that many of the trips generated by the prison only use Highway 33 as a connection between the Prison and Highway 269.

The actual volume of traffic currently on Highway 33 near Highway 269 is assumed to be an estimated 2,600 daily trips. This total includes the "base" flow of 1,600 trips, an estimated 600 trips generated by the Prison that connect with Highway 269 and other City streets north of Highway 33, and an estimated 400 local trips between San Joaquin and Seventh Avenue.

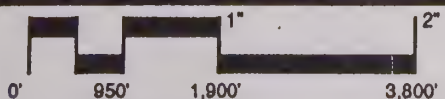
For the purpose of developing an estimate of the 2010 "with project" traffic volume on Highway 33, the following adjustments were made to the existing volume:

- 1) The current "base" flow was increased by a factor of 1.43 (to account for an assumed regional annual growth rate of 2.0 percent),
- 2) The existing local trips were increased by a factor of 1.7 (to account for the projected City-wide increase in trips as a result of the project)
- 3) 1,500 new trips were added (to account for the local trips that will be generated by the proposed land uses along Highway 33, particularly the industrial uses).



EXHIBIT 4

AVENAL GENERAL PLAN



COLLINS & ASSOCIATES
PLANNING CONSULTANTS

PROJECTED TRAFFIC VOLUMES

PROJECTED VEHICLE TRIPS PER DAY AT GIVEN LOCATIONS

The number of trips that currently is generated by the Prison was not adjusted. The resulting 2010 "with project" traffic volume on 33 near 269 is calculated to be approximately 4,500 daily trips. It should be noted that if the proposed industrial area along Highway 33 is fully developed with traffic-intensive uses, the 2010 traffic volumes on 33 may be significantly higher.

For a peak-hour volume that is 10 percent of the daily volume, Highway 33 will be operating at LOS "B" based on the procedures for evaluating rural two-lane highways presented in Highway Capacity Manual, 1985 (Transportation Research Board).

In the 1990 Route Concept Report prepared for by Caltrans for Highway 33, a "Concept" LOS "D" was assigned to the segment of 33 between 36th Avenue and the Kings-Fresno County line. This relatively low threshold for improvements was assigned to this segment of Highway 33 because it is classified a "rural minor arterial" that primarily serves the needs of the rural westside of the San Joaquin valley.

Highway 269

The 1990 Traffic Volumes published by Caltrans indicates that Highway 269 had an AADT volume of approximately 4,800 trips between Highway 33 and the Fresno-Kings County line. At the County line, it had an AADT volume of approximately 3,600 trips.

It is assumed that 3,600 daily trips represents the traffic on Highway 269 in Avenal that is generated by regional activities and land uses. It is expected that these trips would increase in response to regional growth more than local development. These regional trips do include many of the trips generated by the Prison because most of the staff at the facility reside in other communities.

The remaining 1,200 trips on Highway 269 are considered local trips, which use the roadway between Highway 33 and Hydril Road. The number of local trips would be expected to increase as growth and development occurs in Avenal.

For the purpose of developing an estimate of the 2010 "with project" traffic volume on Highway 269, the following adjustments were made to the existing volume:

- 1) The current regional volume (less 500 prison-generated trips) was increased by a factor of 1.43 (to account for an assumed regional annual growth rate of 2.0 percent),
- 2) The existing local trips were increased by a factor of 1.7 (to account for the projected City-wide increase in trips as a result of the project)

The number of trips that currently is generated by the Prison was not adjusted. The resulting 2010 "with project" traffic volume on Highway 269 between 33 and Hydril Road is calculated to be approximately 7,000 daily trips.

For a peak-hour volume that is 10 percent of the daily volume, Highway 269 will be operating at LOS "C" based on the application of "system planning" procedures for evaluating rural two-lane highways presented in Highway Capacity Manual, 1985 (Transportation Research Board).

In the 1990 Route Concept Report prepared for by Caltrans for Highway 33, a "Concept" LOS "D" was assigned to the segment of 269 between Highway 33 and Hydril Road. This relatively low threshold for improvements was assigned to this segment of 269 because it is a classified "rural minor arterial" that primarily serves the needs of the small urban area of Avenal.

4.153 Mitigation Measures

Although it appears that all of the City streets will be operating at LOS "A" with the projected 2010 "with project" traffic volumes, and Highways 33 and 269 will be operating at LOS "C" or better, the following measures are recommended:

- 1) The City should establish a minimum operational standard of LOS "C" for all components of the City's circulation system.
- 2) The City should establish a program of collecting traffic counts at regular intervals on the major components of the City's street network. This program should include counts of the through and turning movements at the busiest intersections in the community.

If the counts indicate a significant increase in traffic on a street segment or at an intersection, a traffic study should be performed to determine the level-of-service that the segment or intersection is operating at.

- 3) Focused traffic impact studies should be conducted for large development projects in the Planning Area, particularly traffic-intensive industrial and commercial projects. These studies should provide an assessment of the impacts that a specific project may have on the City's circulation system, including Highways 33 and 269.
- 4) The City should contact Kings County regarding the county-wide traffic model that currently is being prepared to determine if it can be used as a planning tool in the future to evaluate development proposals.
- 5) Development projects should comply with policies of the updated Circulation Element.

4.16 SEWER SYSTEM

4.161 Existing Conditions

Existing conditions for Avenal's sewer system is described in Section No. 2 of this document.

4.162 Environmental Impacts

Flow Generation

The proposed 2010 land uses in the urban portion of Avenal, assuming full development, will generate an estimated average flow of 1.11 mgd (see Table No. 4). This represents an increase of approximately 200 percent over the 1991 average "non-prison" sewage flows (0.36 mgd) at the City's treatment plant. It is assumed that the sewage flows generated by the prison will not change significantly during the life of the project. In 1991, the prison generated an average flow of approximately 0.30 mgd. Based on these projections, the combined prison and non-prison sewage flows will be approximately 1.41 mgd when the planned land uses are fully developed.

Table No. 4
Average "Non-Prison" Daily Sewage Flows
for
Proposed 2010 Land Uses
(assuming full development)

<u>Land Use</u>	<u>Area (acres)</u>	<u>Unit Flow (gpd per acre)</u>	<u>Total Demand (mgd)</u>
Single-family Res.	469	992	0.47
Multi-family Res.	62	2,480	0.15
Commercial ¹	131	1,000	0.13
Industrial	102	3,000	0.31
Schools	87	600	0.05
Parks	29	100	0.00
Total:			1.11 mgd

¹ Includes 24 acres of governmental land uses
Source: Collins & Associates, 1992

Single-family residential uses, with an assumed average density of four units per gross acre, an occupancy of 3.1 people per unit, and a flow generation rate of 80 gpd per capita, will generate 992 gpd per acre (gda). Multi-family residential units, with an assumed density of ten units per gross acre, an occupancy of 3.1 people per unit, and a flow generation rate of 80 gpd per capita, will generate 2,480 gpd per acre.

The per capita flow rates used to calculate the future residential flow are approximately seven percent higher than the estimated 1991 residential per capita flow rates. The 1991 rates were lower than those of prior years due to the reduced quantity of aqueduct water the City received in 1991 and the resulting water conservation measures that were implemented.

Commercial land uses and industrial land uses are assigned aggregate flow generation rates of 1,000 gda and 3,000 gda, respectively. Schools are expected to generate an estimated 600 gda, while parks are expected to generate 100 gda.

The relatively high industrial unit flow rate, which is based on the experiences of other valley communities, accounts for food processing facilities and other water-intensive operations. The full development of the planned industrial land uses would change the character of the City's sewage. The flows from the City currently are comprised of approximately 90 percent "domestic" sewage and 10 percent "commercial/industrial" sewage. With the planned industrial uses, "industrial" sewage will comprise approximately 28 percent of the City's flows.

Collection System

The existing sewage collection system, particularly the two major trunk lines in Laneva Boulevard, will experience an increase in flow as currently vacant lands are developed in accordance with the proposed land uses. If the flows reach the effective capacity of these lines before the urban area is fully developed, the ability of the lines to serve additional development will be adversely effected. It is difficult, at this time, to project how many developing acres can be served by the City's existing major lines without reliable flow records and a master plan of the sewer system.

Planned new development around the urban area will also require that the service area of the City's sewer system is expanded to include currently unsewered areas. Service to these areas will require the installation of new lines and, possibly, pump stations.

Treatment Plant

With the development of the proposed land uses, the projected average daily "non-prison" flows of 1.11 mgd will exceed the City's current treatment plant capacity allocation of 0.9 mgd by approximately 23 percent. Should additional lands within the planning area develop, the flows to the plant potentially could be

significantly higher.

As discussed above, it is assumed that the flows generated by the existing Avenal prison will remain at the 1991 level of approximately 0.30 mgd over the planning period.

It is clear that the City's current allocation of the plant's capacity is not adequate to handle the projected "non-prison" flows. However, the combined projected prison and non-prison flow of approximately 1.41 mgd are under the plant's design capacity of 1.8 mgd (and the plant's permitted discharge flow of 1.63 mgd).

Therefore, the City will have to either negotiate with the State Department of Corrections for an increased allocation to accommodate the projected non-prison flows, or it will be necessary to expand the plant in the future.

The development of the planned industrial land uses potentially could result in untreated waste flows reaching the plant that disrupt the biological treatment process at the plant. Such disruptions could result in the short-term discharge of effluent (from the plant) that does not comply with the permit conditions established by the Regional Water Quality Control Board.

Disposal

As the effluent flows from the plant increase in the future, the existing storage pond located near the prison may not have adequate capacity to detain the effluent for an extended period of time. In addition, the acreage of the crop land that is currently available for effluent disposal may not be adequate to dispose of the projected flows from the plant. The capacity of the storage pond and the acreage of crop land that effluent is applied to currently are regulated by the RWQCB. Under a prior agreement with the City, the Prison is responsible for disposing of the effluent that emanates from the treatment plant.

Untreated waste flows from the planned industrial land uses may also include potential contaminants that can not be removed by the City's plant. In such cases, these contaminants could accumulate in the soil and groundwater under the effluent storage pond(s) and the crop land that the effluent is applied on. The potential contaminants of particular concern include salts that would be produced by food processing plants and metals that would be produced by a variety of industrial operations.

Untreated industrial waste flows can also contaminate the sludge that is produced at the treatment plant, which could limit the City's ability to dispose of the sludge off-site.

4.162 Mitigation Measures and Monitoring

- 1) The City should, within the next two years, prepare a Master Plan of improvements for the sewer collection system that will provide sewer service to the Planning Area as it develops.
- 2) In order to accommodate the projected non-prison flows that the planned land uses will generate when fully developed, the City should pursue one or a combination of the following measures:
 - a) Attempt to re-negotiate the existing treatment plant agreement with the State Department of Corrections to increase the City's allocation of the plant's capacity. The City should initiate communication with the State regarding this issue not later than when the average non-prison flows at the plant reach 0.67 mgd, which is approximately 75 percent of the City's allocation of the design capacity of the plant.
 - b) Prepare a master plan to increase the capacity of the sewer treatment plant. The master plan should identify alternative funding sources for the recommended improvements. The master plan process should be initiated either during the City's discussions with the State Department of Corrections or immediately after the discussions with the State are concluded (in the event the State is not willing to re-negotiate the agreement).
- 3) Verify that adequate crop land is available to dispose of increased effluent flows from the City's treatment plant. Should additional acreage be required in the future, the City should pursue agreements for effluent application with the owners of suitable crop land.
- 4) The City should adopt an ordinance that requires industries with potential contaminants in their sewage flows to pre-treat the sewage on-site before it is discharged into the City collection system.
- 5) The City should develop a monitoring program to periodically sample and analyze the soil from the effluent storage pond(s), and if appropriate, soil from the crop lands that the effluent is applied to.

Mitigation monitoring - The City Manager, Public Works Director and City Engineer shall review the above mitigation measures. On an annual basis, this team will prepare a status report on the capacity of the wastewater treatment for the City Council. This report shall include recommendations regarding future expansion plans, negotiations with the State Department of Corrections, and potential funding mechanisms to expand the treatment plant.

4.163 Residual Impact

The potential impacts of the project can be reduced to a level of insignificance with the implementation of the recommended mitigation measures.

4.17 WATER SYSTEM

4.171 Existing Conditions

Avenal's existing water system is described in Section No. 2 of this document.

4.172 Environmental Impacts

Demand

The proposed 2010 land uses in the urban portion of Avenal, assuming full development, will have an estimated average water demand of 2.44 mgd, or 2,730 acre-feet per year (see Table No. 5). This represents an increase of approximately 103 percent over the recent average annual demand of 1.16 mgd (1,300 acre-feet). It is assumed that the water demand of prison will not change significantly during the life of the project. The prison's annual demand has averaged 0.60 mgd (670 acre-feet) since 1988. Based on these projections, the combined prison and non-prison water demands will be approximately 3.04 mgd (3,400 acre-feet) when the planned land uses are fully developed.

TableNo. 5
Average "Non-Prison" Daily Water Demand
for
Proposed 2010 Land Uses
(assuming full development)

<u>Land Use</u>	<u>Area</u> <u>(acres)</u>	<u>Unit Demand</u> <u>(gpd per acre)</u>	<u>Total Demand</u> <u>(mgd)</u>
Single-family Res	469	3,100	1.45
Multi-family Res	62	6,200	0.38
Commercial ¹	131	1,100	0.14
Industrial	102	3,200	0.33
School	87	1,200	0.10
Parks	29	1,500	0.04
Total:			2.44 mgd

¹ Includes 24 acres of governmental land uses.
Source: Collins & Associates, 1992

The unit rates presented in Table No. 5 represent average year-round demand conditions. Seasonal rates vary somewhat from these average rates, particularly for residential, school, and park uses which tend to have high landscaping irrigation demands during the summer.

Single-family residential uses, with an assumed density of four units per gross acre, an occupancy of 3.1 people per unit, and a per capita demand of 250 gpd, will have an average demand of 3,100 gpd per acre. Multi-family residential uses, with an assumed density of ten units per gross acre, an occupancy of 3.1 people per unit, and a per capita demand of 200 gpd, will have an average demand of 6,200 gpd per acre.

The per capita flow rates used to calculate the future residential water demands are comparable to the estimated average per capita flow rates in the urban portion of Avenal over the past four years.

Commercial and industrial land uses have been assigned aggregate water demand rates of 1,100 and 3,200 gda, respectively. Because these uses are expected to have limited irrigation demands, their water demand rates are only slightly higher than their sewage generation rates. Schools and parks have been assigned water demand rates that are significantly higher than their sewage generation rates because they have relatively high irrigation demands during the summer.

Based on a peak day to average day demand "peaking" ratio of 2.0, which is being used by Yamabe & Horn in the preparation of Avenal's Water Master Plan, the peak daily demand for the Planning Area will be 4.88 mgd (5,470 gallons per minute).

With the full development of the planned land uses, the character of the City's water consumption will change somewhat. Approximately 96 percent of the current consumption is for "domestic" uses, which includes residential uses, schools and parks, while approximately four percent of the demand is for commercial and industrial uses.

Supply

Avenal's contract with the USBR allocates a maximum annual delivery of 3,500 acre feet (3.12 mgd) to the City. However, as a result of the extended drought conditions California is experiencing, USBR reduced the City's allocation to 1,750 acre-feet (1.56 mgd) in 1991 and 1,400 acre-feet (1.25 mgd) in 1992.

Based on these reductions, it is clear that the City cannot rely exclusively on USBR water to meet the demands of the community as it grows in the future. This realization has prompted the City to consider alternative sources of water.

As discussed in Section No. 2 of this document, the City currently is examining the feasibility of developing a well field near the water plant to supplement its USBR water deliveries with groundwater. However, because the local groundwater tends to have high levels of arsenic and total dissolved solids, the groundwater would have to be "blended" with the water from the aqueduct at a ratio of 40 percent groundwater to 60 percent surface water.

If it is assumed that groundwater can be used to satisfy only up to 40 percent of the combined prison and non-prison demand. At least 2,040 acre-feet of surface water must be available to the City when the planned land uses are fully developed and the demand reaches approximately 3,400 acre-feet. This means that it would be necessary for the City to receive a "firm" annual delivery of at least 2,040 acre-feet of surface water. And, approximately 1,360 acre-feet of groundwater would have to be pumped in order to satisfy the projected annual demand of the planned land uses at full build-out and the demands of the prison.

Because of future climatological and/or political constraints, it may not be feasible for the USBR to consistently deliver 1,800 to 2,000 acre-feet per year to Avenal. Therefore, it may be difficult for the City to consistently meet the projected demands of the community and the prison as the planned land uses approach full development. When it appears that the 60/40 "blend" of surface water and groundwater will not meet the short-term demand of the community and prison, the City can implement water conservation measures. However, if the 60/40 "blend" can not meet the long-term demand, it may necessary for the City to treat the groundwater in order to increase the amount that is blended with the City's surface water deliveries.

Although 1,360 acre-feet (840 gpm) does not represent a significant withdrawal of groundwater on an annual basis, if the well field aquifer does not have adequate recharge capabilities, an overdraft condition could occur as result of the pumping. Such a condition will progressively lower the static water level in the aquifer, which could result in reduced production (unless the pumps are lowered) and increased pumping costs.

A localized overdraft condition can also result in a cone of depression or groundwater "sink" under the City's well field. This condition can cause undesirable minerals occurring naturally in the groundwater or chemicals that have been applied to agricultural lands and moved down through the soils to the groundwater to migrate toward the well field and contaminate the City's water supply.

Pumping Plants

The water plant that is currently operational has a design capacity of 3.0 mgd (3,400 acre-feet per year). With that capacity, the plant should be able to accommodate virtually all of the projected demand of the planned land uses at full build-out provided that adequate "downstream" storage capacity is available to meet short-term peak demands. In the event that additional capacity is required in the future, the City's second water plant, which currently is not in operation, is available.

Distribution System

Providing water service to developing lands in the Planning Area will require the extension of existing lines, the construction of new lines, and other improvements to the City's water distribution system. It is expected that the Water Master Plan that is presently being prepared for the City by Yamabe & Horn will identify the improvements that will have to be made to the existing water system in order to serve the community as the planned land uses develop.

4.173 Mitigation Measures

- 1) If the findings of the City's current groundwater feasibility study are promising, the City should proceed with an exploratory drilling and pump testing program to evaluate the hydraulic performance of the underlying aquifers and chemical character of the groundwater.
- 2) The City should endeavor to obtain an indication from the USBR as to the amount of Canal water that will be delivered to Avenal during "normal" and "dry" years as the City's population increases in the future.
- 3) The City should develop water conservation measures, such as restricted lawn watering, that can be implemented during short-term water shortages, as well as measures, such as low-volume water fixtures in new structures, that provide long-term conservation benefits.
- 4) The City should require meters for all new water connections and have the meters read on a regular interval. Meters will provide water consumption data for the various land uses in the community and facilitate the establishment and enforcement of water conservation policies.
- 5) The water depths in the wells at the planned well field, if constructed, should be monitored on a regular basis in order to determine if increased groundwater demands are effecting the producing aquifers. A sustained trend of declining water levels may indicate that the aquifers are in an overdraft condition. In the event that such a condition does occur, it may be necessary to implement a conservation program or, for a more severe condition, prohibit or severely restrict additional development.
- 6) The City should monitor the quality of the groundwater withdrawn from the planned well field on a regular basis in the interest of detecting the presence of potential contaminants.

- 7) Should the quantity or quality of the groundwater from the well field begin to deteriorate as the Planning Area is developed, the City should examine the benefits of deepening or reconstructing the wells to penetrate aquifers that produce more acceptable quality water.
- 8) The City should implement the recommendations of the pending Water Master Plan in order to provide water service to the planned land uses as they develop.
- 9) The Water Master Plan should be updated as the City's non-prison population approaches 7,500, which should be mid-way through the planning period if Avenal's population increases as projected during the planning period.

4.174 Residual Impacts

The potential impacts of the project, including a future groundwater overdraft condition, can be reduced to a level of insignificance with the implementation of the recommended mitigation measures.

4.18 STORM DRAINAGE

4.181 Existing Conditions

Avenal's existing storm drainage system is described in Section No. 2 of this document.

4.182 Environmental Impacts

Drainage Conditions

The development of the proposed land uses in the undeveloped portions of the Planning Area will change the existing runoff patterns in those area. The introduction of streets and other improvements will increase the volume of runoff and the rate at which the lands drain.

It will be necessary to construct storage basins and install new pipelines and other improvements in order to serve new development and not impact the existing drainage conditions in Avenal.

In order to avoid contributing additional water to the area along Highway 33 that already receives much of the runoff from Avenal, the proposed Land Use Element map shows a "park-pond" facility in the area south of Kern Street and east of Seventh Avenue. Runoff from this area, which is designated for "Medium Density Residential" uses, and the already developed area north of Kern Street can be routed to this facility, where the water will either be detained and later discharged at a reduced rate or totally retained. This proposed facility will also serve as a park site with either active or passive recreational improvements that should be available to use through most of the year.

Water Quality

The quality of stormwater runoff from Planning Area could also be effected by the development of the proposed land uses. It is generally recognized that urban stormwater runoff carries higher levels of metals, oils, greases and other contaminants than runoff from undeveloped lands. Therefore, as undeveloped lands in the Planning Area are urbanized, the level of contaminants in the runoff would be expected to increase. This increase in contaminants could adversely effect the lands west of Highway 33 that the runoff drains to.

The Environmental Protection Agency (EPA) regulations that establish National Pollutant Discharge Elimination System (NPDES) permit application requirements for municipal stormwater discharges are not expected to apply to Avenal becuase the City's storm waters are not discharged to channels carrying waters of the State or nation.

4.183 Mitigation Measures

- 1) The City should, within the next two years, prepare a Storm Drainage Master Plan that analyses the drainage conditions in the Planning Area with the proposed land uses and identifies the improvements that are needed to serve the community as the proposed uses develop. In particular, the Master Plan should identify the improvements needed to dispose of excess storm waters from the proposed land uses.
- 2) The Master Plan should be updated as necessary to reflect changes in the planned growth patterns.
- 3) Future storm water basins/parks should be constructed with a fenced "low-flow" area in order to contain potential storm water contaminants in an isolated area. A "low-flow" area will also keep nuisance water and runoff from low-intensity storm events from encroaching on the recreational areas.
- 4) The City should establish a program to monitor the soils in the bottom of the basins, particularly basins that also serve as parks, to determine if unacceptable concentrations of contaminants are accumulating at the top of the soil profile. As necessary, the bottom soils should be collected and disposed of in an environmentally sound manner.
- 5) Although the EPA storm water discharge regulations are not expected to apply to Avenal, it is recommended that the City develop a pollution control management program that includes source and low-cost structural controls for developing area, and well as control measures for previously developed areas.
- 6) The City should consider the establishment of a storm water utility as a means to finance the cost the recommended monitoring programs and other pertinent expenditures.

4.184 Residual Impacts

The potential impacts of the project can be reduced to a level of insignificance with the implementation of the recommended mitigation measures.

5.0 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The following potential adverse environmental effects appear to be unavoidable if the General Plan is approved, even if proposed mitigation measures are implemented. These unavoidable effects are as follows:

1. Loss of prime and unique farmland to urbanization and exposure of existing farm operations to incompatible urban uses.
2. Potential "taking" of rare and endangered species.
3. Significant increases in emissions of NO_x, SO_x and PM₁₀ to the local and Valley-wide air basin.
4. Overcrowding of existing school facilities and lack of funds for the acquisition, construction and operation of future schools.

6.0 ALTERNATIVES TO THE PROPOSED ACTION

6.01 No Project

This alternative would preclude additional development beyond that what is already designated for development by Avenal's current General Plan. The environmental impacts described in Section 4.0, Environmental Impact Analysis, would be less significant if this alternative were adopted by the City of Avenal.

This alternative would maintain portions of the planning area in its current land use condition. Furthermore, it would preclude the need for additional public services for the planning area beyond what the current General Plan allows, thereby having less of a fiscal impact on the City of Avenal and other public agencies.

Under the existing General Plan, agricultural land will continue to be urbanized, there will still continue to be an increase in the number of school-aged children attending public schools, roadways will continue to become more congested with traffic, and air and water quality will continue deteriorate. Environmental impacts will occur under the no alternative, however, the degree of these impacts will be less than that of the proposed project.

6.02 Modified Project Alternative

The modified project alternative proposes that the overall residential densities of the Land Use Element be increased. The Consultant feels that there is ample land designated for high density residential uses but that residential densities that would be provided for by "low" and "medium" designations are not dense enough. By increasing the residential density standards of the zone districts that are consistent with these land use designations, certain potential environmental impacts could be reduced. Consumption of agricultural land and extension of public services are infrastructure are examples.

To increase densities, the modified project alternative proposes that the zone districts consistent with the "low" and "medium" residential designations be modified as follows:

- low density residential: Eliminate half-acre minimum lot sizes and replace with quarter-acre minimum lot sizes.
- medium density residential: Consider a mix of lot sizes under the R-1 district, which could include 6000 square foot lots, 5000 square foot lots and duplex units on scattered corner lots.

A secondary aspect of this alternative is to delineate a 10-year growth boundary with a policy stating that 80 percent of the land must be developed within this boundary line prior to opening up additional land for urbanization. Land outside the 10-year boundary would be zoned for intensive or extensive agriculture.

6.03 Alternative Land Use Plan

This alternative land use plan considers the environmental impacts that were identified in Section 4.0, Environmental Impact Analysis. It will not reduce all the impacts identified in this section to an "insignificant" level; however, should this alternative be adopted, its impact on the environment will be less than that of the proposed project. In general, this alternative attempts to avoid the following:

- premature conversion of agricultural land and urban/ag. conflicts
- "taking" of rare and endangered species
- locating residential units in areas that are subject to wildland fires

Conversion of agricultural land and urban/ag. conflicts

This alternative proposes a 10-year growth line that will protect surrounding agricultural land from premature urbanization and it will establish boundary lines (buffer areas) between land that will be urbanized in the near future and agricultural land that will not be developed for the next ten years.

"Taking" of rare and endangered species

The alternative plan proposes that land in the northern half of Section 16 (north of the Avenal District Hospital) be designated extensive agriculture instead of low density residential. This would better protect rare and endangered species that frequent this area.

Exposure to wildland fires

The alternative plan proposes that land north of Hydril Road be designated extensive agriculture instead of low density residential. This will insure that residential dwelling are not exposed to wildland fires, which are prevalent in grassland areas.

7.0 LONG-TERM IMPLICATIONS OF THE PROPOSED PROJECT

7.01 Short-Term Use of the Environment versus its Long-Term Productivity

The General Plan will commit the planning area to development consistent with the Land Use, the Circulation and the Open Space, Conservation, Parks and Recreation elements of this plan. This project will designate future lands for urbanization that are presently designated for agriculture. The General Plan provides for sufficient land to serve Avenal's population growth over the next 18 years, projected to be 9477 at the end of the planning period.

The long-term productivity of the environment could be adversely affected by the continuous growth of the community. Air quality will decline as the driving population in the planning area increases, agricultural land will be taken out of production, rare and endangered species may be threatened by encroaching urbanization, and more residential dwelling could be exposed to wildland fires.

7.02 Irreversible Environmental Changes

Irreversible environmental changes are as follows:

1. Loss of agricultural land.
2. "Taking" of rare and endangered species
3. The scenic appearance of the planning area as open space areas become urbanized with buildings and other improvements.
4. Increase in the amount of impervious surfaces thereby causing additional storm water runoff.
5. Increase in groundwater pumping in the San Joaquin Valley. This could deplete the groundwater in the aquifer from which Avenal draws its domestic water.

7.03 Growth-Inducing Impacts

Adoption of the Avenal General Plan in itself is not generally a growth-inducing impact. It does, however, encourage the opportunity for urban growth within the planning area to occur, if certain lands are designated for agriculture, and it does change the type of development that could occur on some properties (e.g designation from low density residential to high density residential).

Over the 18-year planning period, Avenal is expected to grow from 5455 to 9477 persons. Approximately, 700 acres of vacant and agricultural land will be urbanized

during that period of time. With this growth will come the attendant environmental impacts - crowded schools, increased traffic, depletion of ground water, additional air pollution, and a community that will feel less like a "small town". These impacts and others are discussed in the Environmental Impact Analysis section of this DEIR.

Adoption of the General Plan could be growth-inducing if land is redesignated to a land use that in turn fosters development that would have not normally occurred had the redesignation not taken place. For example, the highway commercial designation at the Interstate 5 intersection could stimulate commercial growth which in turn could increase the number of residents in Avenal.

Assuming adoption of the General Plan will be somewhat growth-inducing, the following services are expected to be impacted.

1. Initially, overcrowded K-6 classrooms. Later in the planning period, overcrowded high school classrooms. Most likely, state and local funding will finance additional classrooms and schools. Lack of state or local funding could require year-round school, double sessions, overcrowded classrooms, and termination of some activities.
2. The wastewater treatment plant may require expansion during the planning period should the State not "transfer" a portion of the Prison's capacity in the treatment plant over to the City. Development impact fees and monthly utility payments could finance the construction of an expansion of the plant if this "transfer" is not forthcoming.
3. Additional residents and urban land uses that are high water users could adversely impact the City's domestic water resources. The City may be required to drill a well near the water treatment plant if water demands exceed the amount of water allocated to the City from the California Aqueduct. Water from this new well may have to be "blended" with aqueduct water or treated at the treatment plant and then "blended".
6. The General Plan will have a gradual but minimal impact on fire suppression, solid waste collection, medical aid and police protection services. These services will expand incrementally as the population of Avenal increases. General fund revenues will finance the expansion of these operations.

7.04 Cumulative Impacts

Cumulative effects are defined as two or more separate effects which when considered together are considerable, or which compound or increase either environmental impact. Cumulative impacts can result in individually minor, but collectively significant impacts taking place over time in different but spatially close locations.

The urbanization that is provided for by this General Plan, when combined with the urbanization of surrounding cities, will cause cumulative environmental impacts. The following impacts are considered to be cumulative and significant:

1. Loss of agricultural land.
2. Increased ozone and PM-10 emissions in a non-attainment air basin.
3. Depletion of the San Joaquin Valley groundwater system.
4. Loss of wildlife habitat.
5. Consumption of capacity in solid waste landfill site.

8.0 EFFECTS FOUND NOT TO BE SIGNIFICANT

Findings contained in Section 4.0, Environmental Impact Analysis, showed that certain environmental effects were "insignificant" because the General Plan and its policies, action programs, development standards and the DEIR's mitigation measures, would reduce the impact to an "insignificant" level. These "insignificant" impacts are as follows:

1. Potential for loss of property and life due to seismic and geologic hazards.
2. Potential for loss of property and life due to flooding.
3. Potential for exposing residents, employees, students and visitors to significant levels of noise.
4. The potential to degrade of scenic resources, both natural and man-made.
5. The potential of damaging or destroying cultural resources.
6. Surface water contamination.
7. Ground water contamination.
8. Solid waste collection and disposal system.
9. Land use conflicts except in the case of agriculture's conflict with encroaching urban uses.
10. The General Plan's impact on law enforcement, fire protection and medical aid services.
11. The General Plan's impact on the circulation system.
12. The General Plan's impact of the City's sewer, water and storm drainage systems.

9.0 ORGANIZATIONS AND PERSONS CONSULTED

Organizations and persons consulted during preparation of the DEIR include the following:

Melissa Schneider, Avenal Planning Department

Evelyn Bachelor, Reef-Sunset School District

Bruce Barnes, Assistant City Manager

Steve Driver, Fire Chief, Kings County Fire Department

Bryan Wheat, Luetentent, Kings County Sheriffs Department

Warden Huskey, Avenal State Prison

Jim Garcia, Avenal Parks and Recreation Department

David Weiland, City Engineer

Jon Demsky, Public Works Director

Bill Zumwalt, Kings County Planning Department

Jack Walker, District 6, CALTRANS

Terry King, Kings County Transportation Planning Agency

Dan Houston, Plant Operator, OMI



Table No. 6
Vacancy Rate, 1980 & 1990

	1980	1990
Armona	3.42	3.48
Avenal	7.02	10.47
Corcoran	3.95	6.67
Hanford	7.90	6.50
Kettleman City	14.39	1.38
Lemoore	7.08	4.52
Stratford	3.95	1.29
Kings County	8.54	5.71

Source: 1992 Avenal Draft Housing Element

The Prison Environmental Impact Report (1984) prepared for the construction of the prison, indicated that as many as 243 employees could be purchasing homes and 207 could be renting. The EIR indicated that it could not predict where those persons would choose to live. In actuality, fewer than expected persons chose to live in Avenal. The principal reasons were:

1. Avenal's perceived isolation,
2. lack of amenities,
3. few employment opportunities for spouses, and

Housing Starts

Table No. 7 shows the number of housing additions from 1980 through 1992. The year of the highest housing starts was 1987, the year the prison was completed.

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